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DEATH OF COLONEL JOSHUA A. NUNN, C.B., D.S.O., C.I.E., F.R.C.V.S., F.R.S.E.

It is with the deepest regret that we announce the death at Oxford, on February 23, of our colleague, Colonel Nunn, whose work in connection with anything which seemed likely to advance the interests of veterinary science has always been in the foremost rank. Born in 1853, he graduated from the Royal Veterinary College, London, in 1877, and immediately entered the Army Veterinary Service, being the last officer to obtain a commission under the old regimental system. His career in the service has been one of the most distinguished possible, and his record for scientific work (both theoretical and practical) and for war service showed that wherever work was to be done Colonel Nunn was always anxious to be there. In Afghanistan, in India, British Burmah, and South Africa, he distinguished himself brilliantly, and his love for foreign travel led him to visit New Zealand, Australia, Japan, China, and other places. His war service gave him the medal and clasp of the Afghan Campaign, the Frontier Medal and the Distinguished Service Order, whilst for his scientific work in the investigation of animal diseases in the Punjab he was made a Companion of the Indian Empire. He was a good linguist, and for many years the Veterinary Journal and the *Veterinary News* have owed most valuable and voluminous translations solely to his energetic efforts; on the staff of each paper he was the editor responsible for all the foreign and colonial news items. As a sportsman Colonel Nunn was well know in England in the Vale of Aylesbury, being a keen follower both of fox and stag hounds.

Of his scientific and literary attainments it is sufficient

to mention that, in addition to the Fellowship of the Royal College of Veterinary Surgeons (of which body he was for some years an Examiner), he was a barrister-at-law, a Fellow of the Royal Society of Edinburgh, a Fellow of the Royal Geographical Society, and an Examiner for the Diploma of Veterinary Hygiene for the University of Liverpool.

Being unable to resign himself to a life of inactivity, it had been his greatest wish, upon completing his period of service, to end his days in some good hunting practice, and at the time of his illness he was negotiating matters for that purpose. He was a man we could ill afford to lose, and the profession will miss him very much, and be much the poorer for his untimely decease.

DEATH OF DR. R. R. BELL.

Roscoe R. Bell, D.V.S., Professor of Materia Medica and Therapeutics in the New York-American Veterinary College, and for many years the acting editor of the *American Veterinary Review*, died at his home in Brooklyn, N.Y., on February 8, 1908, after having suffered from Bright's disease for two years, and having been in a critical condition for four or five months.

Dr. Bell was born in Virginia in 1858. At the age of 12 he entered a newspaper office in Richmond, Virginia, and in 1880 moved to New York City, and became an editorial writer upon horse topics for the *Turf, Field, and Farm*, and the *Spirit of the Times*. Becoming interested in veterinary science, he entered the American Veterinary College, and graduated therefrom at the head of his class in 1887. He was at once appointed to a lectureship in that institution, and in 1889 he was made Professor of Materia Medica and Therapeutics, which position he continued to ably fill up to the time of his death.

Immediately after graduation he entered private practice in Brooklyn, where he soon built up one of the most extensive and important private practices in America, which was continued up to 1906, when failing health caused him to abandon it, after which he gave his time and energies partly to some extensive financial investments, but chiefly to the *American Veterinary Review*.

Soon after graduation he became identified with Dr. A. Liautard in the editorial duties of the *American Veterinary Review*, and, when Dr. Liautard removed to Paris, France, in 1895, he became virtually acting editor, while Dr. Liautard retained the position of chief editor.

The experience of Dr. Bell as printer, newspaper reporter, and writer in horse papers, afforded an excellent training for his work on the *Review*, which was further favoured in later years by the fact that his ability as a practitioner, coupled with economy and judicious investments of his savings from practice, had placed him

THE LATE DR. ROSCOE R. BELL, D.V.S.

Professor of Materia Medica and Therapeutics in the New York American Veterinary College, and Acting Editor to the *American Veterinary Review.*

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in financial independence, and enabled him to enter vigorously into editorial work without being compelled to count the financial cost. He enjoyed the work, and could afford it as a pleasure.

Dr. Bell was also a prominent worker in the various veterinary societies, and was a member, at the time of his death, of the American Veterinary Medical Association, the New York State Veterinary Medical Society, and the Veterinary Medical Society of New York City, each of which had conferred upon him the honour of the presidency. He was president of the American Veterinary Medical Association for the year 1903-4, of the New York State Veterinary Medical Society for 1900-1, and of the Veterinary Medical Society of New York City for 1896-7. The principal veterinary writings of Dr. Bell consist of "The Veterinarian's Call Book," and his editorials in, and original contributions to, the *Review*.

Early in the history of the United States Bureau of Animal Industry Dr. Bell acted as Chief Veterinarian for Brooklyn and Long Island at the time when pleuro-pneumonia of cattle was being eradicated by the Government in New York City and vicinity.

He leaves a wife, two sons, and a daughter, besides other relatives, to mourn his loss. He was unusually devoted to his family, where his loss is most keenly felt.

But his family was by no means the sole beneficiary of his life, nor alone in the loss by his death. He will be sorely missed by the veterinary profession of America, and the severity of the loss will be even more fully realised later than it is at present.

Dr. Bell probably enjoyed the widest personal acquaintance among American veterinarians of any member of the profession. His personality was in every way attractive, and he enjoyed the warm friendship of every one.

His loss will be most keenly felt in relation to his work upon the *American Veterinary Review*, which consisted largely of an embodiment of his ideals added to those of Dr. Liautard, and which he brought to a high state of usefulness for the American veterinary profession, and made it one of the most extensive veterinary journals published.

He understood the veterinary profession of America, and was in intelligent sympathy with its needs, and constantly aimed to bring the *Review* to the highest possible degree of usefulness to the profession as it existed, and to constantly lead the profession to a higher level.

The funeral services which were held on February 11 were largely attended, and there was present the most representative body of veterinarians which has ever been assembled in America to pay tribute to the worth of a deceased colleague. The faculty of the New York-American Veterinary College attended in a body, while the veterinary college of the University of Pennsylvania and the New York State Veterinary College were represented by W. Horace Hoskins and W. L. Williams respectively. The Veterinary Medical Association of New York City was represented by the president and secretary, Drs. Grenside and Blair, and a large number of the members.

The attendance of veterinarians at the obsequies constituted a loyal tribute to the personal and professional worth of the man. It was well for the veterinary profession of America that this tribute should have been so hearty, as it shows that, as a body, it recognises high personal character and professional ideals, of which the life and

services of Dr. Bell constituted a worthy example. While the veterinary profession of America must long and keenly regret its irreparable loss in the untimely death of Dr. Bell, it must recognise with gratitude its profit from his life, from his blameless personal character, his professional ability and integrity, his loyalty to the veterinary profession and his energetic and effective activity in each and every direction where he could in any manner contribute to the upbuilding and advancement of veterinary science.

Editorials.

MR. DOLLAR AND THE PROPOSED VETERINARY SURGEONS ACT (1881) AMENDMENT BILL.

In response to a request from some of our readers, we reproduce in this issue a copy of the proposed new Bill. We believe the request is largely due to a circular letter which Mr. J. A. W. Dollar, a member of the Council of the Royal College of Veterinary Surgeons, has addressed to the members of the profession. We submit that no draft Bill ever framed was perfect and satisfactory to everybody, so that we are not surprised to see that somebody appears to be indignant about it. We sincerely regret the tone of Mr. Dollar's letter, and feel sure that, although he may be prompted by the best of motives, he would have been more convincing and have done more good had he adopted a somewhat less pugilistic attitude. We are glad to see that Mr. Dollar does not put forward as his principal objection the statement that has been made by some people, viz., that an annual registration fee would be a great hardship to needy members of the profession. We believe such hardship to be purely imaginary. On the face of it, Mr. Dollar would appear to have made out a much stronger case. We fail to find, on reading through his letter, any indication that he objects to an annual registration fee in principle. On the contrary, he seems to approve of it, but agrees with others who think the fee might with advantage not be a permanently fixed one, but one to be fixed annually according to the exigencies of circumstances, but not to exceed one guinea. We would prefer a permanently fixed

fee, so that we should know exactly what is expected from us, and be free from that annoying uncertainty which one feels when the National Budget is being prepared, and we hope against hope for some reduction of the Income Tax. No! Mr. Dollar's chief concern is the disproportion between the crime and the punishment. An important feature in British justice is the endeavour to "make the punishment fit the crime," and we frankly admit at once that "striking a man off the rolls" is punishment out of all proportion to his failing to pay a guinea. "Striking off the rolls" usually implies serious professional disgrace, but if a man allowed his name to lapse would that bear the same interpretation? We say most decidedly it would not. A cardinal rule in the practice of medicine is that prevention is better than cure; and how well that would apply in this case. To prevent any inconvenience or trouble, all a man would have to do would be to pay his guinea. But Mr. Dollar says he may forget! The Bill provides for such a contingency, and directs that every member shall be reminded at the beginning of each year that his annual fee is due. Surely that is fair enough.

Mr. Dollar's next point is with reference to the existing practitioners. He quotes a portion of Section 4, Subsection 2, which he interprets according to his own lights. He says it "actually proposes to enfranchise the registered practitioner for ever; to relieve him of all responsibilities and contributions; to throw the ægis of its recognition over him; to permit him to advertise or do any other unprofessional act; to commit misdemeanours or higher offences, and—to snap his fingers at us." If all that were true it would indeed be a serious matter; but we do not accept Mr. Dollar's interpretation. Section 2 of the proposed Bill entirely negatives any such reading. It provides clearly and specifically that registered existing practitioners "shall be subject to the jurisdiction of the Royal College of Veterinary Surgeons in all respects and in like manner as if they were members of the Royal College of Veterinary Surgeons, and shall be liable in like manner to have their names removed from the register of existing practitioners, &c." The suggestion of the Council is scrupulously fair. It offers the protection afforded by the Veterinary Surgeons Acts to all registered existing practitioners, and in return simply asks that

they should subject themselves to similar discipline with the members of the Royal College of Veterinary Surgeons. It inflicts absolutely no hardship on anybody, is the essence of justice, and, in our opinion, it only states definitely in words the conditions which most registered practitioners believed themselves to enjoy at the present moment.

The last point raised by Mr. Dollar was with reference to the working of the Registration Committee, and that reminds us of the last question which he asked on his postcard. He asked us to state whether we approved of this Committee acting in the double capacity of prosecutor and judge. We do not think that question at all fairly worded, as it implies that at the present time such is the case. We submit that the Committee would be more correctly likened to a jury whose duty it is simply to hear the evidence and to give a verdict. The Committee is obviously appointed to *enquire* into any reported irregularities, and not to prosecute anybody. If irregularities are proved, then the law (professional) acts, or should act, automatically. Undoubtedly some modification of the present system might be advantageous, but it is nothing like so unjust as Mr. Dollar implies.

It is very unfortunate that at the time the Bill was being framed Mr. Dollar should have been consistently unable to attend to the duties he undertook on behalf of the profession. His reasons must be weighty ones if he wishes to justify himself in the eyes of his constituents, and doubtless he will have no difficulty on that score. However, we are of opinion that he has struck a very serious blow to progress by his action in this matter, and we suggest to him that it is not too late to undo it, and that he might do an immense amount of good if he withdrew his objection or protest in its present form and submitted some amendments in its place. Such an action would show a broader mind, and would indicate a true interest in the progress and welfare of the profession to which we belong. Inner dissensions should be strenuously avoided in these troublous times, when the veterinary profession needs, more than at any other period of its existence, to show a united front.

THE IMPORTANCE OF AN EFFICIENT VETERINARY SERVICE.

THE recent recrudescence of foot and mouth disease in Scotland and the suspected outbreak of rabies in Northamptonshire, illustrate again very forcibly the necessity for the maintenance of an efficient staff of veterinary experts trained in the intimate knowledge of the contagious diseases of animals, and also of the methods which are likely to be the most effectual in stamping them out with the least possible delay. The prompt manner in which the cattle outbreak has been taken in hand has saved the stock-owners of the country many thousands of pounds, for no disease caused more havoc and inconvenience amongst dairy herds, when it existed broadcast, than did "foot and mouth." Rabies has for years been non-existent in England, and in that respect we are the envy of every nation on the Continent of Europe, and the measures imposed upon the admission of dogs into Great Britain have been more than justified by the results obtained.

The Veterinary Department of the Board of Agriculture may legitimately claim that the credit of dealing with these plagues so satisfactorily belongs largely to them, for no body of laymen, however clever they may be, can possibly stamp out animal diseases without the guidance of the expert, and no man can claim to have so thorough a knowledge of animal diseases as the qualified and trained veterinarian. We have no hesitation in stating that promptitude of action, combined with accurate knowledge of what is necessary, will absolutely succeed in preventing the further spread of these two diseases, whose reappearance must have caused the authorities at Whitehall Place considerable anxiety.

VETERINARY SURGEONS ACT (1881) AMENDMENT BILL, 1907.

WHEREAS doubts have arisen whether persons registered as "Existing Practitioners" under Section 15 of the Veterinary Surgeons Act 1881 are subject to the jurisdiction of the Royal College of Veterinary Surgeons as conferred on them by that Act in respect of persons on the Register of Veterinary Surgeons.

AND WHEREAS it is desirable that persons registered as "Existing Practitioners" shall be entitled to style themselves Veterinary Surgeons.

AND WHEREAS the profession of Veterinary Surgeons is not protected from unqualified persons practising as such under the cover of registration under the Joint Stock Companies Acts.

AND WHEREAS it is desirable to provide further funds for the Royal College of Veterinary Surgeons to carry out the duties imposed on it by Statute and Charters. Be it therefore enacted by the King's Most Excellent Majesty and by and with the advice and consent of the Lords Spiritual and Temporal and Commons in this present Parliament assembled and by the Authority of the same as follows:—

(1) This Act shall be supplemental to and read with the Veterinary Surgeons Act 1881 (hereinafter called the Principal Act) and the Veterinary Surgeons Amendment Act 1900, and may be cited as the Veterinary Surgeons Act (1881) Amendment Act 1907 and shall come into operation on the 1st day of January 1909.

(2) From and after the commencement of this Act all persons duly registered as "Existing Practitioners" in accordance with Section 15 of the Principal Act and whose names are on the Register kept for that purpose shall be entitled to style themselves Veterinary Surgeons and shall be subject to the jurisdiction of the Royal College of Veterinary Surgeons in all respects and in like manner as if they were members of the Royal College of Veterinary Surgeons and shall be liable in like manner to have their names removed from the Register of Existing Practitioners by the Council of the said College and shall in like manner be bound by any bye-laws already made and which may hereafter be duly made defining what amounts to conduct disgraceful in a professional respect within the meaning of Section 6 of the Principal Act.

(3) (*a*) The Registrar shall in each year on the 1st day of January or on a date to be fixed by the Council send to each member of the Royal College of Veterinary Surgeons whose name appears on the Register for the time being at the address therein specified or to any other address of which written notice shall have been given by such member to the Registrar and also to all those who subsequent to the publication of such Register shall have become entitled to be registered as members of the Royal College of Veterinary Surgeons a notice requiring the payment of a fee of One guinea which fee must be paid to the Registrar of the Royal College of Veterinary Surgeons on or before the 30th day of January in each year. The Registrar shall cause the names of the members who have paid the fee of One guinea to be printed in the Register to be published in accordance with Section 3 of the Principal Act at a date subsequent to the 31st day of January in each year a copy of such Register to be posted to each member

whose name and address appears on such Register free of all cost together with a receipt for such annual fee.

(*b*) Any member of the Royal College of Veterinary Surgeons who shall not have paid such annual fee for the time being within the time limited for the purpose shall cease to be on the Register of Veterinary Surgeons and shall be liable to the penalties and be under the disabilities declared in and by Section 4 of this Act.

(*c*) The omission of any name from such Register shall be *prima facie* evidence of the non-payment of the fee, subject to the production of the Registrar's receipt. This Section shall not apply to members of the Royal College of Veterinary Surgeons who do not practise in the United Kingdom or to Existing Practitioners.

(4) (*a*) Section 17 of the Principal Act is hereby repealed except as regards offences under it committed within the period of six months prior to the commencement of this Act.

(*b*) If after the commencement of this Act any person other than a person who for the time being is on the Register of Veterinary Surgeons and who has paid the annual registration fee for the time being or who at the time of the passing of the Principal Act held the Veterinary Certificate of the Highland and Agricultural Society of Scotland or who has been registered as an Existing Practitioner under Section 15 of the Principal Act takes or uses the title of Veterinary Surgeon or Veterinary Practitioner or any name title addition or description stating or implying that he is a Veterinary Surgeon or a Practitioner of Veterinary Surgery or Medicine or both or of any branch thereof or is specially qualified to practise the same or who acts for fee or reward as a Veterinary Surgeon in any branch of the Science or Art of Veterinary Surgery or Medicine shall be liable to a fine not exceeding Twenty pounds.

(*c*) From and after the same day a person other than as in this Section mentioned shall not be entitled to recover in any Court any fee or charge for performing any Veterinary operation, or for giving any Veterinary attendance or advice or for acting in any manner as a Veterinary Surgeon or Veterinary Practitioner, or for practising in any case Veterinary Surgery or any branch thereof.

(5) Anything which would be an offence under the Veterinary Surgeons Acts, if committed by an individual, shall be an offence if committed by a Company.

General Articles.

A FEW OF THE IMPOSITIONS AND DEVICES PRACTISED BY THE LOWER CASTE OF HORSE-DEALER IN ORDER TO DECEIVE THE VETERINARY SURGEON AND THE INTENDING PURCHASER.

BY E. McSWINEY, LONDON.

UNFORTUNATELY, it forms too prominent a feature of man's vanity to affect to know much more about horses than he really does, and many a purchaser flatters himself with the idea that what he does not know is not worth knowing. It is the knowledge of this weakness in our vanity that engenders and encourages the multitudinous army of "copers," the majority of whom are adepts in the practice of imposition. The numerous frauds that are daily practised with success upon purchasers of horses render it a matter of absolute necessity that the veterinary surgeon at least should be always on his guard against the usual tricks of dealers and their accomplices when called on to purchase an animal or to examine it for soundness.

We will suppose ourselves in the yard of a man who professes to have the management and the disposal of the stud of "an officer suddenly ordered abroad"—a frequent occurrence. Here we ought to accustom ourselves "not to believe anything we hear, and only half what we see." Very little observation will soon show us that the dealer and his coadjutors entertain decided objections to permitting a horse under inspection to remain at rest for a single minute.

To begin with, let us assume that we are entrusted by a client with the important duty of purchasing a horse with good action; by good action here I mean what the client means, viz., an animal that trots well. We must remember that a moderately good trotter may be made to step out and bend himself in a manner very unlike his ordinary method of going. This is done by the help of a sharp curb, spurs, pressure of the legs, and nice hands capable of feeling a horse whenever he throws himself forward, and giving him a lift when he seems to be relapsing into anything like a lack of spirit. A horse, on being spurred, naturally flies forward, but, the curb at the same time restraining him, he is thrown upon his haunches, and the action of the forelegs gains in height what it loses in length. This is a fact, of course, well known to horse-dealers and breakers, and they never fail to turn it to the best account. The leg of the rider that cannot be seen by the intending purchaser is the one which strikes the animal; but most horses will sufficiently indicate this to a close observer by the switching of the tail when they feel the prick of the spur. Should the horse be led out, instead of ridden, he will most probably be placed upon rising ground to show off his forequarters to the best advantage, the shoulder being thereby made to appear more sloping; the same result is achieved by making the horse advance the leg nearest the purchaser a little in front of its comrade. Though the dealer is perfectly justified in these little manœuvres to show off his goods to the best advantage, the prudent purchaser should not please his eye at the expense of his judgment, but see the horse on level ground and with his feet placed evenly.

I ought to mention that, in criticising action, attention must be paid to breed. If the action is very high, look out for trace of having worn a knee-cap, and look again at the eyes and ears. Should the animal stumble (as any horse may do), be careful to observe how he recovers himself; if he springs out as if he feared the whip or spur, he is probably an old offender.

Horse No. 2 is submitted to us for examination. In this case sand-cracks are present, but they have been carefully filled up. How are we to discover them? It is not always easy without minute scrutiny to detect sandcrack or other cracks where an attempt has been made to conceal them. If the dealer has used melted resin to obliterate the cracks and then scraped the part so as to make it perfectly even with the horn, our hands will pass evenly over the diseased part without feeling any difference between it and the rest of the hoof. If the foot be lifted up and the hoof carefully inspected, the resin will be detected, even though a coating of tar and oil be industriously rubbed over to lend a smooth and uniform appearance. If, instead of resin, the dealer employs a mixture of Archangel tar, beeswax and resin, as they frequently do, it becomes more difficult for the veterinary surgeon to discover the cracks. Perhaps the most difficult of all is where a mixture of gum ammoniacum and gutta-percha has been employed. Unfortunately, in this case the veterinary surgeon often fails to detect the mean fraud, and more especially when the owner refuses to have the shoes removed. Remember that a vendor can object to the removal of his horse's shoes in the course of examination for soundness. We will gain nothing by arguing or remonstrating with the dealer over the presence of a particular defect in his horse. Then what is to be done in this case? We may mention in the certificate that the shoes were not removed, or instead, we ought to direct our attention, say, to the seat of corn and try to convey to the dealer as cleverly as possible that a corn is present, and before giving a definite opinion we must have the shoes off. Of course he resents the carrying out of such a suggestion with all the "kitchen Latin" at his command, but, knowing that a corn does not exist and off his guard, he will have the shoe removed, or do anything else to grasp the opportunity of "placarding" a veterinary surgeon. The shoes are off, and now our diagnosis is easy by trotting the animal or by lifting the opposite limb, when the extra weight thrown on the diseased one will be sufficient to make the crack visible, no matter what the composition of the stuffing material may be.

In untrained animals the cracks are sometimes filled with mud; in other words, the horse is walked through puddles until his fetlocks are covered; he is then presented to us to examine, and being, of course, under the influence of the familiar "ginger fake," he is not in a position to be examined at ease by the kid-gloved hands of some of us. Of course the dealer has prepared a slippery story how the brute got frightened by a motor-car, or something to that effect, and thus ran into an adjacent muddy ditch. The animal may in addition have been previously dosed with whisky, the effects of which, exaggerated by the irritation of the ginger, make him so excitable that a timid veterinary surgeon might be tempted to pass over the feet, especially when no evidence of lameness is manifest. That veterinary surgeons, or at least that a veterinary surgeon, has done this in a certain fair is,

I regret to say, quite a fact. It is almost superfluous for me to mention that in such cases the feet must always be washed, and then further examination proceeded with.

I will now cite the details of a case in which a horse suffering from side-bone, but not lame, was examined and passed sound by a veterinary surgeon. This veterinary surgeon was asked to examine a dealer's horse which had been purchased by an individual knowing little about the points, and much less about the defects of an equine. The animal had been subjected as usual to whisky and ginger, and naturally was very excited and lashed out whenever an onlooker approached. The dealer, in his overweening solicitude for the veterinary surgeon's safety, should have the animal's leg raised during the examination, and the leg raised was the affected one; nevertheless, the horse remained restive, and the examiner was glad to see him trot after he had finished his examination at the off side, forgetting all the time to examine the leg the thoughtful dealer held up.

Our next horse is suffering from obscure lameness in the near fore, but his thoughtful owner resorts to a scheme by which groggy lameness in one leg is disguised, by making the action even. This trick is known in various parts by the terms "diamonding," "beaning," "balancing," or "wedging," and is performed by removing the shoe of the sound foot and paring out the sole until it yields to the pressure of the thumb. The shoe is then replaced and a wedge of wood, a pebble, or a bean is driven in between the sole and shoe until sufficient pain is produced to make the animal equally tender on both legs. To further conceal the lameness or to give an appearance of energy to the worn-out horse, the dealer subjects the animal to the torture of the whip. The animal, previously to being shown, is so barbarously flagellated that, under the influence of terror of the further application of the lash, his attention is withdrawn from the diseased feet and he trots off heedless of his lameness. Whenever there is much punishment, or the threat of it, while showing a horse, be sure there is something to conceal, and remember that our suspicions ought to be excited by the short step the animal invariably takes—a step not in keeping with a well-laid, sloping shoulder. Should the shoulder be somewhat upright, then the catchy action may be peculiar to such a conformation. In either case have the shoes off, and thus calmly confirm our diagnosis.

Occasionally veterinary surgeons are asked by a client to purchase a hunter up to a certain weight. If we take on this responsibility we require to know a good deal of the points of the animal. Among other things, we know that it is of paramount importance not to have the leg tied in below the knee. The dealer knows this also, and to an animal of such a conformation, he is ready to apply a preparation which, in a short time, will completely alter the leg, so that now the shank-bone is almost in a line with the knee. Such a conformation, if normal, needless to say, is one to be admired. Hence we must never forget to pinch the skin below the knee, draw it out from the bone, and see if the part is normal. We may overlook this in the ordinary examination for splints, inflamed tendons, &c., but I consider it is our duty to look out for it all times in the course of examinations.

Not infrequently our services are required in the selection of a

trapper, and in addition we are requested to see the animal driven, or to drive it ourselves. You may accuse me here of going outside our duty, but I think, where a handsome fee is the reward it would not be *derogatory* to the veterinary profession if its members acceded to the request of, perhaps, a timid though wealthy female client. Well, agreed on that the animal is sound, we next see it being put in harness, remembering meanwhile to watch the dealer's movements. Watch him especially should he approach the animal's head just as we are about to move off; for, at this time, the shrewd dealer knows that by placing a foreign body, such as a pebble, in the animal's mouth, underneath the tongue, many a *jibbing* horse will start off quite cheerfully to the great delight of the intending purchaser who has not noticed the dealer's movements. Though the majority of *jibbing* horses are cured for the time being by this simple device to divert their attention, still, in a few cases, the dodge fails; but if one of the fore feet be raised for a short time by way of examining for stone in the foot, the animal starts off quite readily when the foot is released as it did in the first instance. Sometimes, but rarely, both these methods fail with a jibber, but the dealer is ever ready with another. He takes care to back the horse just as the veterinary surgeon handles the reins, by way to see that the harness fits accurately, when probably the animal moves off quite naturally. Remember, a jibbing horse, or any horse, hates to be backed, and when released he will be only too glad to proceed as Nature intended him—that is, head first. It is therefore obvious to keep the dealer and his man at a respectable distance from the horse, if we wish to gain the confidence of our client.

Matters of equal importance occur when the horse-vendor tries to give his animal a youthful appearance; this he does in various ways. The first and most important is by tampering with the animal's teeth (with which I shall deal later on), and secondly, by obliterating the hollow over the eyeball by puncturing the skin of the part and inflating it with air by means of a narrow tube. Undoubtedly the animal looks better after this little operation, but the merest tyro in matters relating to horseflesh will not forget to place his fingers there during the course of examination, with the result, of course, that the air is expelled and the hollow remains as before, to the great annoyance of the dealer, to the great surprise of our client, and to our own satisfaction.

Again, the busy dealer will alter the colour of the grey hairs of tail, face, or wherever they exist. This he does with a solution of nitrate of silver, which changes the grey colour to a jet black for a period of ten to fourteen days. Its application has been extended to the feet and legs. It is a remarkable fact that some horses with one white fore sock and with perfectly normal action will appear to dish when trotted towards you. To alter this apparent defect the dealer applies a strong solution of nitrate of silver to the white part of the foot; this blackens the hair as already mentioned, and then the horse moves the limb in a perfectly normal fashion; the dishing is no longer obvious. This colouring of the hair is probably a minor detail in an examination for soundness, but should we detect it the encomiums of our client will continue to shower on us for many a day.

It is obvious that the dealer who is capable of descending as low as the foot can easily reach the hock for the purpose of concealing a spavin. A dealer hates the word "spavin"; to a hock so affected he

prefers to apply the term "coarse hock," but he does not forget to alter the appearance of the other one so that now both hocks are exactly alike. This may be done in two ways: (1) by knocking the sound hock with a small mallet made for the purpose; (2) by injecting a solution of perchloride of mercury. The latter method is, of course, the more scientific, and offers the best chance of deceiving the veterinary surgeon, who prefers to examine a hock with his eyes instead of with his hands.

Now we proceed to find how animals with defective wind can be turned out by the horse-dealer as seemingly sound.

Broken-winded Horses.—The animal is kept without food or water for twenty-four hours previous to being offered for sale. On the morning of expected sale he gets a sharp trot, and then receives a breakfast of shot, lard, and carron oil. Certainly in most cases this does away with the double expiratory effort while the animal is at rest; but, when exerted in the gallop, the characteristic symptoms usually become manifest. If in doubt, offer the horse a little water, which he drinks eagerly, and in a few minutes the double expiratory effort is visible. I may mention that in addition to the above dose some add a little gunpowder, in the belief that the action of the lead is thereby increased.

Other agents used for a lengthened period before sale are raw fat bacon, opium, aconite, arsenic, strychnine, iodide of potassium. In these cases also you will diagnose the disease on galloping the animal, though sometimes where a combination of arsenic, iron, strychnine, and iodide of potassium has been administered daily for a month, the animal holds out pretty well, but the careful observer cannot be deceived.

Broken wind is accompanied by flatulence, which is always a noticeable symptom. To allow the flatus to escape more easily, it was the custom formerly to pass a red-hot iron into the rectum from immediately below the tail; through this opening a leaden ring was inserted to keep it patent. The effect of this was to do away with the disagreeable sound which accompanies the passage of flatus when that act is naturally performed.

In the case of whistling and roaring, especially if the noise made is very slight, the animal may sometimes, under the treatment of the horse-dealer, deceive the examiner. In harness horses affected with roaring it is customary to place a pad under the noseband of the bridle. This pad presses over the space included between the nasal and premaxillary bones, and when the animal is exerted the characteristic noise may not be heard, the explanation of this probably being that the quantity of air taken in at each inspiration is regulated so that the further falling in of the arytenoid cartilage is prevented as the horse is exerted, and consequently less noise emitted.

The same result is obtained by the insertion, high up in the left nasal chamber, of a perforated portion of corky material. When the animal becomes accustomed to the presence of this foreign body, not alone will he manifest no visible inconvenience in the way of sneezing or snorting, but he may actually stand the most severe exertion his veterinary examiner wishes to impose, without exhibiting in the least that characteristic noise so well known to the veterinary surgeon. I do not mean to convey that this result is obtained in every case of roaring, but in those individual cases where the sound is manifested only when the animal is being pulled up. Why it should be successful

in those cases I am unable to say. I have seen one roarer in which this method succeeded in deceiving the veterinary surgeon, who, of course, passed the animal sound. I saw the horse two days before being examined, and I can vouch for the accuracy of the statement that the horse was pronounced sound. Bearing this fact in mind, must it not be sad to contemplate the possible wholesale fraud to which purchasers of horseflesh have been subjected up to this hour? How many veterinary surgeons in private practice have we seen, in the course of examination of a hunter, inspect the upper part of the nasal chamber for this foreign body? Few. I admit that many are not prepared for this, and may never have heard of such a device to obliterate the characteristic sound made by a roarer, but we must remember, as I have already mentioned, but in another form, that the active mind of the dealer, tempered by a remorseless conscience, is ever ready to coin or map out a scheme which operates very often by entrapping the unwary veterinary surgeon. In this connection I think it is not out of place to repeat to you the advice once given me when I was a student at the Albert Agricultural College, Dublin. It was given as an aid in purchasing an animal. The words are few but sensible: "Regard every man in the market for the time being as your enemy, and if you do you will make no mistake in the act of purchasing." Those words are applicable to the veterinary surgeon.

Whilst examining a horse, regard every onlooker or bystander as our enemy for the time being, and if we do we shall have no reason to alter the decision we have formed. I mention this as it is not an unusual thing for a veterinary surgeon, whilst examining a horse, to be interrupted by the dealer or the dealer's accomplice. In such cases we must always be suspicious. The interruption is carried out in the following fashion: Just as the veterinary surgeon is about to examine a portion of the horse's body which shows some defect, such as plug in the nostril, filled-up cracks in the foot, &c., the accomplice, who is usually a most attractive individual wearing a speckless vest, and pants with a crease, or, rather, an edge on them sufficient to cut off any doubts entertained by an ordinary observer as to whether their wearer is a gentleman, appears. He places his hand on the veterinary surgeon's shoulder, and hurriedly informs him that he has a *few* horses to be examined immediately, as he must catch the next train. Such news makes the examiner listen almost with admiration. At this instant the accomplice directs his attention to the dealer, who is probably holding the bridle, and, with the recognition words, "Good day, Mr. So-and-so," he adds, "You have got a good one this time; let me see him trot." The horse is trotted, but the veterinary surgeon has overlooked the blemish; the hypnotising "downward passes" of the accomplice have had their effect.

When strychnine has been subcutaneously injected into the region of the larynx of a roarer or a whistler some time before the animal is being examined, the case may be a difficult one for the veterinary surgeon to discover. The sound may also be lessened by the administration of spirits of chloroform, but this latter has only a transitory effect. I have not seen any horses on which those agents have been employed, but I have got my information from a reliable source, and have no reason to doubt their good effects in some cases of roaring. All we can do is give the horse a good doing: gallop him as long as he can

gallop, test him to the last, and then, with the rider off his back, make the horse walk round us with his near side to the centre, in as small a circle as possible, and should no evidence of defective wind be manifest, our responsibility ceases. I may add that with some whistlers so treated a short gallop up hill is sometimes necessary to develop the noise.

Where no drugs have been employed, knowing dealers, who wish to prevent the noise made by a roarer from reaching the ears of an examiner, start the horse a considerable distance before putting him to the gallop, and on returning slacken the pace, so that the breathing becomes tranquil before the horse reaches the examiner. This is called "coming the long trot." So much for defective wind.

I now place on the veterinary surgeon the duty of purchasing an animal which "must not be nervous or fidgety"—these are the client's words. The dealer states that he has the very horse to answer this description, but in reality he is a nervous brute, affected by sounds and noise of every description, particularly when arising from any object or circumstance which he cannot see. The animal's ears have been carefully plugged with cotton-wool, which, of course, renders him deaf, and, consequently, when presented to an intending purchaser he appears to move about in as calm a fashion as his master.

Dealers are not above trying a joke (as they call it) on the veterinary surgeon, especially on one who is prepared to give his opinion or render his services for a sum of 5s. The dealer procures a donkey or an old nag, and into one of the animal's ears he places about half a drachm shot. Immediately a train of symptoms is set up, which I have been told are most confusing even to the professional man. The dealer calls in the veterinary surgeon, and takes care to tell him that the patient is not worth much, consequently he cannot afford to pay much of a fee. The veterinary surgeon arrives, and sees his patient surrounded, perhaps, by a crowd of onlookers who are "in the know," and during the veterinary surgeon's examination their time is occupied in smoking, coughing, and expectorating in all directions. Needless to state, the diagnosis is not always correct; and, to make the veterinary surgeon's position more ridiculous, the patient is brought to his house next day in perfect health, and an explanation is given by the dealer how his own treatment was successful. Should the veterinary surgeon be green enough to ask the fellow what he gave, he gets a reply after this fashion: Canal water 2 oz., Coal tar 1½ oz., &c., given in two doses.

I will now place before you what I consider to be the most trying ordeal to which the newly qualified man can be subjected. This occurs, or at least may occur, when a dealer's horse, which is *sound*, is submitted for examination. The horse is galloped, having the dealer on its back, when suddenly we hear a noise, as we believe, emanating from the horse; we hear it again and again. Our diagnosis is hastily made, and we reject the horse for defective wind. The dealer, who already knows that his horse is sound, has purposely made the noise himself, with the sole intention of ruining, perhaps for ever, the prospects of a newly-qualified man, for the rejected horse is immediately taken to a well-established old practitioner, who, on examination, finds the horse sound, and gives a certificate to that effect. Then the newly-qualified man feels somewhat small, and perhaps never finds out the cause of his deplorable blunder.

The noise is caused by the dealer placing his tongue against the roof of his mouth, and with his lips slightly separated, a noise is made, whilst the horse is in full speed, which closely simulates roaring in the equine. I may tell you, that I have experienced this ordeal once, and I have learned a lesson which I shall never forget. I will give you the whole facts of the case.

I used to "see practice" with a veterinary surgeon who always examined horses exhibited at a certain horse show, and I was usually present during such examinations. During the examination of a certain dealer's horse I was instrumental in drawing the examiner's attention to a certain minor defect, as I thought, which he had overlooked. At any rate, the result was that the horse was rejected. We lost sight of the dealer and his horse for about a fortnight, after which time he honoured us by his presence at the veterinary surgeon's yard, but this time with a different horse, which he was selling to a medical man. I happened to be the first to meet him, and directed him to the riding school in the yard, until such time as the veterinary surgeon was disengaged. In the meantime the dealer (whose feelings towards me by this time were not imbued with love) gave his horse a few canters round, and finally galloped. I heard, as I thought, a distinct noise of a roarer every time the horse passed me. In a short time the veterinary surgeon appeared, and as he did he caught the sound also; but it was not foreign to that old gentleman's practised ear, for he gave me a wink, which I caught in time to prevent me offering an opinion. The examination was proceeded with, and the horse was sound.

I mention this case to show you that the responsibility of a veterinary surgeon is always great, and more especially if he be newly graduated, for then he often seems to offer an easy mark for the well-aimed bolt of the dealer.

I now pass on to Alterations made in the Horse's Mouth.—"There may in certain cases be reason to suspect that the mouth of the horse under examination has been manipulated, with the view to make the animal appear younger or older than it really is. Up to the age of 5 the seller may try to convince the purchaser that the horse is above its real age; but as 6 years old is supposed to be the period of equine perfection, an old horse gains by being made to appear as near that age as possible." (Brown's "Dentition.")

(1) *To make the Animal look Older than it really is.*— Early extraction of the temporary incisors facilitates the cutting of the permanent ones, and by commencing with the central incisor as soon as signs of their displacement are seen, and continuing the same system in respect of the lateral and corner teeth, the whole of the permanent incisors may be in the mouth soon after 4 years. The cutting of the tusks may be facilitated by the application of a hot iron to the gum over the part through which they will later protrude; the same result is got by the use of the knife. Treated in this fashion, a horse at "four years off" is accepted as a 5-year-old, if we rely solely on the incisors as indicators of the age; and here, I may remark, we are often deceived, and we deserve to be, so long as we confine our attention solely to the incisors of an animal presented to us at the age of 5. Always be suspicious when examining a horse said to be a 5-year-old. Some veterinary surgeons—and these old men—maintain that the condition of the tusks will differentiate, the tusk being usually well up at 5, and only cutting through the gum at 4 years. I admit that in the

majority of cases the tusks will be in the mouth between the ages of 4 and 5, but we must remember the possibility of those teeth being seen as early as 3, or delayed to the eighth year or longer; and further, we must not forget that their development can be hastened (though not to the same extent as the incisors) by incising over them with a knife, or by the application of the hot iron. The most reliable method of differentiating between a 4-year-old, treated as I have just mentioned, and a 5-year-old, is by the appearance of the third and sixth molars, for at 4 years these teeth have only just approached the level of the others, and when the finger is placed on their tables the somewhat pointed projections will invariably be felt.

Very often only the corner teeth have been extracted. In these cases in addition to the appearance of the third and sixth molars, we have the fairly reliable evidence of the want of wear in the other incisors. In this connection I may state that the owner of the horse alluded to may not forget to tell us that the animal was castrated when a yearling, and hence the slow development of the tusks. Needless to mention, the accuracy of that statement has been disproved.

If a 3-year-old is being palmed off as a 4-year-old, we must refer to the third and sixth molars, as we thus get the best evidence of differentiation; the sixth is absent, and the third is a temporary tooth. We also note the condition of the first and second molars.

(2) *To make the Animal look Younger than it really is.*—A process called "bishoping" is employed so called from the name of the scoundrel who first practised it. This is done by burning a hole in the tables of the corner teeth, so that a depression is left corresponding to the infundibulum of a 7-year-old. It was employed in the case of horses of the age of 10 or 12, but the fraud was easily discovered, as the central enamel was destroyed.

A more modern method consists in using an instrument called a graver, to scoop out the portion of the tooth enclosed by the central enamel, and then with a camel-hair pencil and a strong solution of nitrate of silver the sides and bottom of this cavity are darkened, so that it appears quite normal. In this method the central enamel is not destroyed, and when practised on a 9- or 10-year old horse, so as to make him appear 7 years, we may fail to detect it if we depend too much on the presence of the infundibulum in the corner incisor as indicative of a 7-year-old. To differentiate we must look for the dental star and at the central enamel in the lower central incisors, the condition of the upper central incisors, and shape of the tables.

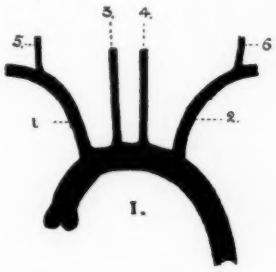
Again, a horse of, say, 18 or 20 may be made to pass as, say, a 12-year-old. This is done by scraping off the lower extremity of Galvayne's line in the upper corner incisors. We must differentiate here by examining the incisors where the infundibulum is still present in the corner teeth if the horse is only 12 years, and also by examining the central enamel of the lower incisors as well as Galvayne's groove, or its equivalent, in the upper lateral incisor.

Whilst emerging from the dealer's yard, I now conclude, but not without reminding you that when we again enter it, perhaps single-handed, we must be prepared, as veterinary surgeons, to form our own opinion by what we see and feel; and when we know, or even think we do, let no persuasion tempt us to disbelieve the evidence of our own senses.

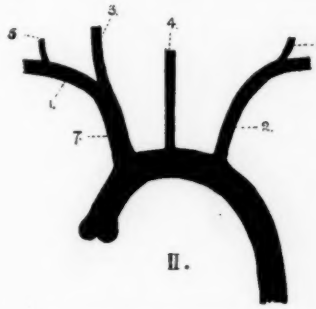
NOTE ON THE MORPHOLOGY OF THE BRANCHES OF THE HORSE'S AORTIC ARCH.

BY O. CHARNOCK BRADLEY, M.D., D.SC., M.R.C.V.S., PROFESSOR OF ANATOMY IN THE ROYAL (DICK) VETERINARY COLLEGE, EDINBURGH.

ANOMALOUS disposition of one or other of the thoracic arteries of the horse is so frequently encountered that one is tempted to conclude that only about half of the animals subjected to dissection conform, in all respects, with the description as given in the various text-books. Frequently the deviations are trifling and of comparatively little interest, but at other times wide variations of morphological importance are found. The most common abnormalities are those associated with the disposition of the various branches arising from the aortic arch. That the so-called anterior aorta is liable to great variation in point of length is conceded on all sides, and that it may even be absent is admitted. How often it is entirely absent would be difficult to say, without the compilation of statistics not at present available, but that its absence is not very infrequent appears to be demonstrated by the number of times, during the past few years, we have noted the circumstance.



I.



II.

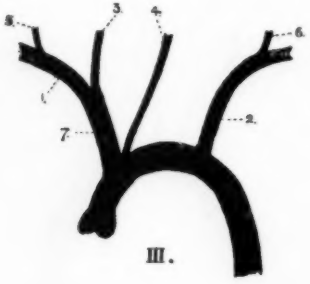
According to current description, also, the two common carotid arteries leave the innominate artery conjoined into a common stem, the so-called cephalic artery. The common trunk—or bicarotid trunk, as it is best named—varies very considerably in length, and may be absent altogether. An exceedingly short bicarotid trunk along with the absence of an "anterior aorta" was met with in a recent dissection-subject, and confirmed a growing conviction that it would be well were students of veterinary anatomy familiar with the morphological significance of these and other variants of the branches of the aortic arch. To those conversant with anatomical literature such significance is, of course, well-known.

A clear understanding of anomalies is gained by the consideration of the various ways in which the subclavian and carotid arteries arise in different species of mammals. Apparently the logically most simple arrangement, as shown in Scheme i., is rarely present among mammals. Parson's,* who has devoted a great amount of attention to the matter,

* On the arrangement of the branches of the mammalian aortic arch. *Journal of Anatomy and Physiology*, vol. xxxvi., 1902, p. 389.

found the condition only once, in a koala, among all the animals dissected by him. From the scheme it will be seen that four vessels leave the aortic arch independently, these being in order from right to left, the right subclavian (1), the right carotid (3), the left carotid (4), and the left subclavian (2).

A more complex arrangement would arise from a fusion of two or more of the four arteries, thus producing a common trunk leaving the aorta, and, after a longer or shorter course, dividing into two or more branches. Scheme ii. is intended to illustrate a fusion of the right subclavian (1) and the right carotid (3) to produce an innominate artery (7). Such a combination obtains in man, the anthropoid apes, monkeys, and some other mammals; but a more common disposition is a modification in which the left carotid (4) springs from the commencement of the innominate (Scheme iii. 7), where a tendency to further fusion is illustrated. This occurs as the normal condition in so many different classes of mammals that to enumerate would be tedious. It is, moreover, the most common anomaly discovered in the dissection of the human body. Furthermore, it is worthy of attention as being a possible variation in the domestic carnivores.



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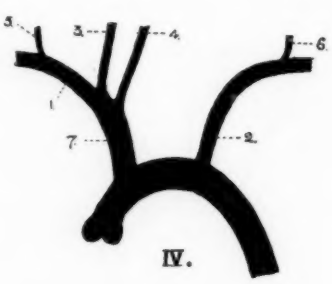


IV.

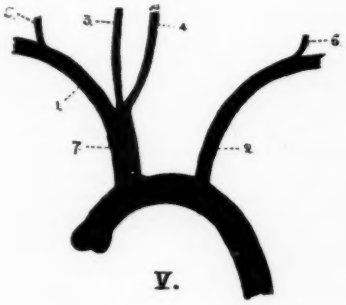
In the domestic dog, and apparently also in most, if not all, the wild Canidæ, the left carotid is so far fused with the innominate artery as to take origin within a short distance of the point at which the right carotid arises (Scheme iv. 4). That is to say, a further step in the process of fusion has been made. The same disposition may obtain in the domestic cat, but not infrequently a short bicarotid trunk leaves the innominate artery and divides into two carotids.

The process of condensation is slightly greater in the pig than it is in the dog. In consequence the two carotids leave the innominate at the same point (Scheme v. 3 and 4). The pig, therefore, stands between the dog and the cat in point of degree of fusion of the branches of the aortic arch.

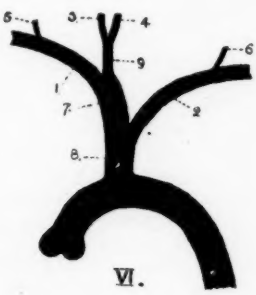
The preceding have illustrated a gradually increasing fusion, which reaches its climax in ungulates. The horse, ox, sheep, goat, many deer, and the tapir have only one vessel arising from the aorta, or, in other words, an "anterior aorta" is present. This has resulted from the blending of the left subclavial and part of the innominate (Scheme vi. 8). The common vessel so produced is much better designated the common brachio-cephalic trunk. The term "aorta"

as used in this connection is unscientific and indefensible, since the adult aorta arises from an embryonic structure of the same name, whereas the common brachio-cephalic trunk is not represented in the embryonic vascular system, and, moreover, only occurs in a somewhat limited group of mammals. It is, so to speak, an adventitious arrangement, and is not in any way fundamental. Were it necessary to say more, it might be added that the term "anterior aorta" does not find a place in modern Continental text-books. In this respect, as in many others, it is time we began to remember that veterinary anatomy is only a part, and an exceedingly small part, of comparative anatomy, and that many of the terms used in this country are purely insular and, therefore, act as a drag on progress.

From a consideration of comparative morphology a clear understanding is gained of the meaning of anomalous conditions in the horse and the other domestic animals. A fusion of the left subclavian with the innominate artery, and the consequent production of a common brachio-cephalic trunk (*truncus brachio-cephalicus communis*) is the last



V.



VI.

step in a process of compression demonstrated throughout the mammalian series. Occasional cases where such extreme compression is wanting are, therefore, to be expected. Absence of the bicarotid trunk (*truncus bicaroticus*) (Scheme vi. 9) is another instance of reversion towards the more primitive condition in which the two carotid arteries have independent origins. The domestic animals illustrate the various steps in the formation of a bicarotid trunk. In the dog the carotids are generally quite independent. In the pig they mostly arise at a common point. In the cat a bicarotid trunk is generally formed, and in the horse, ox, and sheep its absence is held as being abnormal.

The true factor in the causation of fusion is not absolutely determined. It has been suggested that the narrowness of the thoracic inlet and the distance of the heart from the inlet may play a part in the production of common arteries from two or more vessels independent in animals in which the heart is closer to the inlet or where the inlet itself is wider. Unfortunately, cases are not infrequent where such factors cannot be said to obtain. It seems reasonable, therefore, to conclude, that whatever the true cause or causes may be, they have not yet been definitely determined. The question is complicated by the fact that there is a marked tendency in some animals, notably in

the horse, for thoracic arteries, other than those arising from the aorta, to combine.

EXPLANATION OF FIGURES.

The reference figures are the same in all the Schemes: (1) Right subclavian; (2) left subclavian; (3) right carotid; (4) left carotid; (5) right vertebral; (6) left vertebral; (7) innominate; (8) *truncus brachio-cephalicus communis;* (9) *truncus bicaroticus.* Scheme i. is after Parsons, modified.

THE USES OF ADRENALIN IN OPHTHALMIC SURGERY.

BY CAPTAIN A. J. HULL, ROYAL ARMY MEDICAL CORPS.

IN an age of therapeutic cynicism it is refreshing to turn to a drug the physiological and therapeutical action of which is at once apparent. Being the most powerful vaso-constrictor in use, adrenalin is frequently used for the purpose of obtaining a bloodless field for operation. Adrenalin, however, possesses even more valuable therapeutic properties, and is also of considerable value as a diagnostic agent.

As a therapeutic agent adrenalin owes its importance to its property of acting as a powerful vaso-constrictor, and hence reducing secretions, reducing the amount of the aqueous humour secreted, and reducing the intraocular tension. Knowing the action of adrenalin upon the capillaries and the lymphatics it is possible to discover many affections of the eye in which adrenalin will be of service. Many diseases of the conjunctiva are benefited by its use. In any disease in which conjunctival hyperæmia is a prominent feature the instillation of adrenalin is worthy of trial. In purulent ophthalmia and ophthalmia of gonorrhœal origin, the instillation of adrenalin may be with advantage combined with the other methods of treatment employed. Catarrhal and granular conjunctivitis are decidedly benefited by the addition of adrenalin to the usual methods of treatment. The preliminary instillation of adrenalin, whilst relieving the pain, increases the efficacy of such reagents as protargol, silver nitrate, copper sulphate, zinc sulphate, and cyanide of mercury. In the case of ulcers of the cornea adrenalin is not as a rule indicated, but in the majority of cases of non-suppurative keratitis it may be employed with advantage. The treatment of interstitial keratitis is rendered more satisfactory by the addition of adrenalin to the solution of atropine used for dilating the pupil. It will be remembered how difficult it is in these cases to obtain a reaction to atropine, and how, as a result, posterior synechiæ are often formed. The difficulty is due to the condition of the cornea, which impedes the absorption of the atropine. Adrenalin is of distinct value in the treatment of iritis and irido-cyclitis, both on account of its antiphlogistic properties and on account of the increased dilatation of the iris. Although atropine is a remedy which it is customary to find used in almost all cases of inflammation of the eye, its influence upon such cases is more than doubtful, and it would be more scientific to limit the use of atropine to those cases in which the formation of posterior synechiæ is feared. Adrenalin may well replace the use of atropine in many cases of hyperæmia.

Adrenalin as a Diagnostic Agent.—The differential diagnosis between iritis and simple conjunctivitis is one of the most recurring questions in medicine, and, simple as the question may appear, the prescriptions of many practitioners always contain atropine whatever the eye may be affected with. The most valuable distinction between the two conditions is the violet haze around the limbus seen in iritis, which is due to congestion of the deep ciliary vessels. If a good deal of superficial congestion be present (congestion of the conjunctival vessels), it may be somewhat difficult to distinguish the violet haze. The use of adrenalin will make the case clear. Upon instilling a few minims of a 1 in 10,000 solution of adrenalin the conjunctival vessels disappear, leaving a perfectly white conjunctiva, and if iritis is present the violet haze of the deep vessels will be distinctly seen; later, the adrenalin will have had time to act upon the ciliary vessels, and these also will disappear. In this way an early and certain diagnosis of iritis can always be made, and the difficulties attending the formation of posterior synechiæ avoided by an early dilatation of the pupil. In a similar manner the diagnosis of diseases of the sclera and conjunctiva are simplified; trachoma granules in a violently inflamed eye will be easily brought into view; patches of episcleritis which would otherwise be overlooked, become visible.

The Use of Adrenalin in Operations upon the Eye.—The question has been raised as to the necessity of using adrenalin when performing eye operations. Its use gives a bloodless field for operation and absolute anæsthesia. Against this it is urged that secondary hæmorrhage is apt to occur as a result of a reaction when the influence of the drug has passed off; moreover, it is argued that its employment is unnecessary, that operations have hitherto been performed without its use with equally good results. These objections cannot be considered to apply to operations upon the annexa bulbi. With regard to operations on the eyeball, the danger of hæmorrhage into the anterior chamber after the operation exists, and some surgeons appear to have been unfortunate as regards this accident. By continuing the instillation of adrenalin after the operation in decreasing doses, the danger of reaction is obviated. Apart from the convenience of a bloodless field the complete anæsthesia obtained is in itself an advantage; although it is urged that this is obtained with cocaine alone, it will be found that several text-books mention the sensitiveness of the iris when the eye is cocainised, and point out the danger of the patient flinching when the iris is grasped.

Darier quoted the following experiment in support of his opinion that the administration of adrenalin at the beginning of an iritis may prevent the occurrence of cyclitis: "By means of a stick of silver nitrate we cauterise the border of the cornea. This violent chemical irritation provokes an intense hyperæmia of the ciliary processes, which quickly betrays itself by an abundant albuminous transudation into the anterior chamber. This reaction of the ciliary body can be prevented by injecting ½ to 1 milligramme of adrenalin." Taking advantage of this property the writer has employed the drug in a considerable series of operations on the globe, with the result that the eyes have quieted down more quickly than in the cases in which adrenalin has not been employed, and that any tendency to irritation from the retention of cortical matter in cataract operations has been avoided.

Methods of Application.—In the case of operations, the eye having been cocainised for ten minutes with a 5 per cent. solution of cocaine, either an ophthalmic tabloid of hemisine is placed under the eyelid, or one or two drops of a 1 in 3,000 solution of adrenalin hydrochloride are dropped into the eye. After waiting one minute cocaine is again instilled, and about two minutes later the eye is ready for operation. The action of adrenalin is more intense in some individuals, and in these cases extreme dilatation of the iris may take place, particularly if a strong solution of adrenalin is used, or if the instillation of adrenalin is commenced too long before the operation. When used as a therapeutic agent, adrenalin may be with advantage combined with cocaine hydrochloride and cyanide of mercury. Darier* recommends the following prescription, which has been extensively employed by the writer :—

Hydrochloride of cocaine	0·10 gr
Solution of 1 in 1,000 adrenalin	1 ,,
Solution of 1 in 2,000 cyanide of mercury ...	10 ,,

(*Journal of the Royal Army Medical Corps.*)

Clinical Articles.

"A CASE OF MESENTERIC ABSCESS" DUE TO STREPTOCOCCIC INFECTION.

BY CAPTAIN W. A. PALLIN, F.R.C.V.S., ARMY VETERINARY CORPS, KILDARE.

SUBJECT: Bay gelding, aged 13. Veterinary history from date of purchase, viz., July 15, 1900, was as follows :—

Disease.	Date of Admission.	Date of Discharge.	Result.
Influenza ...	July 20, 1900	August 30, 1900 ...	Cured.
Catarrh ...	October 4, 1900 ...	October 12, 1900 ...	Cured.
Strangles ...	May 6, 1900	May 13, 1901	Cured.

The history and symptoms of the case were as follows: The animal had never been a good "doer" since he joined. Nevertheless, he had always done his work well until October 25, 1907, when he was sent into the sick lines from the riding school with a report that he was dull, was shivering, and was apparently out of sorts. On examination it was found that the mucous membranes were slightly injected, the pulse was weak and accelerated, rigors were present, and the temperature was 104·2° F. The animal was put in a loose box, and treated for simple fever. On the following day the temperature was still up, and after the morning feed, which consisted simply of a small hot bran mash, symptoms of abdominal pain were manifested by the fact that during the day he was lying down a good deal, and occasionally looking round at his flanks. Still there was no sign of acute pain. However, he was examined *per rectum*, given enemas, and a pint of linseed oil later in the day. Meanwhile the febrifuge treatment was also continued.

October 27.—Out of pain, and temperature down to 102·4°, but the

* Darier, "Ocular Therapeutics."

mucous membranes are still injected, and the pulse weak and accelerated. Continue nursing and stimulants.

October 28.—Again showing signs of uneasiness, and temperature up to 104·8° in the afternoon.

October 29.—Temperature down to 102° to-day, and not showing any signs of pain; the bowels are working nicely, but the fæces are frequently covered with mucus.

October 31.—Temperature down to normal, but mucous membranes are still very much discoloured, and the pulse continues weak, and although the appetite is good, the horse is dull, and is losing condition daily.

November 4.—Again showing symptoms of pain, and temperature up to 102·8°, the pulse is accelerated and weak, and the mucous membranes do not show any signs of improving. The symptoms of pain are most marked shortly after feeding, when he lies down, and, after looking round at the flanks occasionally, he gets into a sitting position, which appears to give him relief.

November 7.—Temperature is down to normal again, but the horse still continues to show uneasiness, particularly after feeding, when he gets into a sitting position, as already mentioned, and will now remain in that position for fifteen or twenty minutes at a time, without being in any way distressed or in any acute pain. The appetite is still good, but he continues to lose condition, and although a careful examination *per rectum* did not reveal anything abnormal, the presence of a mesenteric abscess is now fairly well indicated, and suspected.

November 13.—Temperature is slightly up again to-day, and symptoms of pain are again manifested, the paroxysms being more acute on this occasion than usual, and necessitating the administration of small doses of chloral hydrate, in addition to the laxative treatment of Epsom salts daily, and periodical doses of linseed oil, regulated according as to how the bowels were working, added to which the case is occasionally let out to graze when not in pain, and the weather is favourable.

November 20.—Continues to show slight symptoms of pain daily, especially after feeding, and he continues to get into a sitting position, which apparently gives him relief.

November 30.—Symptoms still much the same, and although the appetite has continued good, the horse is becoming very emaciated. This afternoon the temperature has suddenly run up to 104·8°, and there is a recurrence of the acute symptoms of pain.

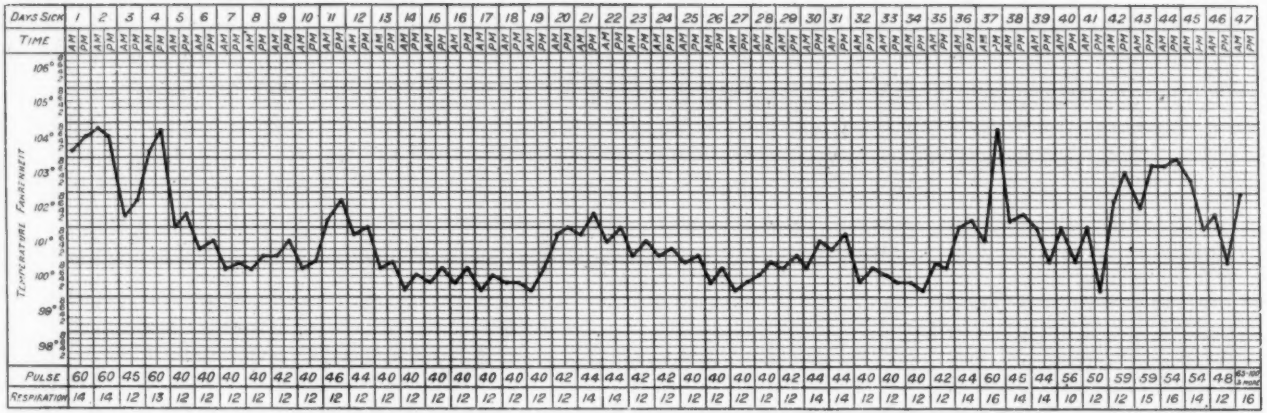
December 1.—Temperature down to 102·2° this morning, but still showing periodical symptoms of pain.

December 2.—Much the same as yesterday.

December 3.—Still showing slight symptoms of pain, and not feeding so well as usual.

December 5.—Temperature is up to 103·6°, and the paroxysms of pain are now getting more acute and more continuous. The pulse is weak and accelerated, and the mucous membranes are getting more injected daily.

December 7.—Making no improvement, and the horse is now almost continually in pain, getting up and lying down, and constantly getting in a sitting position. He is now very much emaciated, and the pulse is gradually getting very weak, and membranes more injected. Temperature to-day is 104°.



Temperature, Pulse and Respiration Chart.—Capt. Pallin's Case.

December 9.—Temperature down to 101°. He is more or less out of pain, and is inclined to eat a little to-day.

December 10.—In great pain. Temperature 103°. Pulse weak, and very much accelerated. Animal sweating, and blowing periodically, and is now in a very critical condition. As the day wore on he gradually became much worse, and death supervened at 8.30 p.m.

The *post-mortem* examination revealed that the immediate cause of death had been peritonitis, brought on by the bursting of a large mesenteric abscess in the peritoneal cavity. The peritoneum lining the abdominal cavity and covering the abdominal viscera was greatly inflamed, and the peritoneal cavity contained a large quantity of fluid mixed with pus. There was a large abscess in the mesentery, which was firmly adherent to three loops of the small intestines and also to the cæcum, causing extensive thickening of the walls of all these structures and consequent stricture of the intestinal canal in at least three places. The abscess when dissected out weighed 11 lb. 4 oz., and had a capacity of at least 1½ pints; the pus which remained in it was thick and fœtid. The abscess walls consisted of organised fibrous tissue, which in some parts was up to 3 in. in thickness. The abscess had broken into the abdominal cavity at a point where the walls of the abscess were thinnest, and where there was least resistance; but there was no communication from the abscess into the alimentary canal.

A microscopical examination of the pus from the abscess revealed that it was due to streptococcic infection. The remaining organs were found to be healthy.

Remarks.—In young horses where strangles is prevalent, it is, I think, well recognised that cases of secondary infection are not uncommon, but here was a horse aged 13. There had not been a case of strangles in the unit to which he belonged for some considerable time, and it was over six years and five months since he had been discharged cured from an attack of strangles, which must have been of a very mild character, seeing that a cure was effected in seven days. Consequently, I think this case is worthy of record and of very considerable interest, especially as to the question of how and when infection took place, *i.e.*, Did the secondary infection take place at the time he was under treatment for strangles, or was this mesenteric abscess due to subsequent infection, and if so, about how long would lesions such as those found on *post-mortem* examination take to develop?

The symptoms and temperature of this case are also very interesting and most instructive.

This is the third case of mesenteric abscess due to streptococcic infection in an aged animal which has come under my notice during the last five years. I regret to say that I have not got the record of the other two cases by me, but the symptoms and *post-mortem* appearances of both were very much the same as in this case. In one, however, an Arab pony (which during that year had won several races, including the Lucknow Army Cup), the symptoms (which appeared in paroxysms) were much more acute, and the only position in which the animal appeared to get relief was when he got on his back, with all four feet in the air. Being a stallion, I thought on several occasions previous to his death that it was a case of strangulated hernia, which kept recurring, as the case ran a course of about two months, with

intervals at times of a week or more without showing any pain or uneasiness. In the case under review the animal appeared to get most relief when he got into a sitting position on his haunches (like a dog), and this attitude was almost invariably assumed immediately after feeding. The cause of this was undoubtedly due to the fact of the close proximity of the abscess to the stomach, as when the latter organ was distended with food, there would be increased pressure on the abscess and the portions of the intestines which were involved; consequently when the animal got into the position already described, the pressure of the abscess against the stomach would be considerably reduced.

ACCIDENTAL LIGATURES ON EXTREMITIES OF SMALL ANIMALS.

BY T. F. PRIME, M.R.C.V.S., UPPER NORWOOD, S.E.

THE necessity for a thorough examination in all clinical cases before adopting a course of treatment and before stating his diagnosis, must be fully realised by the man who would be a successful clinician, and this is very well demonstrated by the two following cases which came under my notice a short time ago, and which, though by no means of an uncommon nature, are nevertheless worth notice because they impress one with the necessity for careful observation.

The first case was that of an Irish terrier with a wound round the forearm which had been getting worse for a fortnight. I was struck by the peculiar level indentation in the middle of the swollen wound, and on carefully examining this I found that the cause was a piece of fine silk tied tightly round the leg.

The second case was a fox terrier which had had several attacks of eczema. He was sent to me because of a small sore place on one toe which irritated him considerably, so that he kept on licking and biting it. On first examination I thought, as the dog was subject to eczema, that this was the nature of the present lesion, but on looking again more closely and observing the swollen appearance of the toe, I was surprised to find an elastic ring embedded in the skin. Needless to say on cutting off the ligature in each case and applying antiseptic lotion the wound healed rapidly.

THE SEQUEL TO AN INTERESTING DISLOCATION OF THE WRIST.

BY T. F. PRIME, M.R.C.V.S., NORWOOD.

IN the VETERINARY JOURNAL for December last I published a clinical note, with a photograph, of what appeared to me to be an unusual and interesting dislocation of the carpal joint. In view of the fact that the wrist was dislocated almost at a right angle to the axis of

FIG. 1.—The dislocated wrist, at right angles to the limb.

the limb, I have been agreeably surprised that the patient's leg has now completely recovered its normal position and that the little dog is now as strong and active as ever. The second photograph shows the normal condition again, as the dog is at present.

FIG. 2.—The patient at the present time.

CREASOTE POISONING IN THE DOG.—RECOVERY.

BY T. F. PRIME, M.R.C.V.S., NORWOOD.

THE subject was an Irish terrier which had been run over, and its foot was badly crushed. The dog was taken, with commendable presence of mind, to a bird specialist, who, with his extensive knowledge of canine medicine, nearly succeeded in putting an end to the injured animal's life. He gave the owner some ointment for the crushed foot and some pills, which, as was very soon demonstrated, contained creasote, a drug by which the dog is peculiarly susceptible of poisoning. After taking four pills the dog became very ill, with vomiting and diarrhœa. When I saw the dog a little later, I found he was almost in a state of collapse, being cold, pulse weak and quick, temperature 105. The dog's breath, skin, and urine smelt highly of coal tar, the vomit and motion were very dark in colour, and also gave off a strong smell of creasote.

As regards treatment, I gave him stimulants alternated with solution of sodæ sulphatis. The dog gradually began to get better, but it was about ten days before he had quite recovered.

There was no possibility of mistaking the cause of the symptoms in this case, the odour was so strong. I do not know what amount of the coal tar preparation there was in the pills and ointment, but the case is of interest as showing that the dog may be poisoned by internal doses of the drug, and is a sufficient warning to us to use this preparation very carefully. Possibly the dog licked some of the ointment off and so got a double dose.

PERMANGANATE OF POTASH AS A DRY DRESSING.

BY J. STEWART WOOD, M.R.C.V.S., PARKSTONE, DORSET.

ALTHOUGH usually prescribed in solution as a lotion, I consider that permanganate of potash has no equal as a dry dressing for granulating wounds, and I have used it as such daily for the past seven years. My favourite formula for such wounds as ordinary broken knee, is :—

℞	Pot. permang. pulv.	ʒi.
	Acid Borac. pulv.	ʒi. to ʒii.
	Carbo. animalis	ʒii.

I first powder the crystals, and then mix with the boracic acid and the charcoal. I usually wash the wounds with warm water and *soap*, dry them, and dust on the powder freely; wounds so treated heal with a *firm* level granulation, and I seldom have to use the caustic stick; they heal rapidly, and if very foul when first seen soon become healthy. The dressing forms a black crust over the wound, which excludes the air and dust. To open joints I apply the powdered crystals without any boracic powder, with excellent results, covering the wound with a pad of cotton wool steeped in collodion. One animal which I so treated I found standing in a *puddle of synovia*, and although the knee is a little stiff, he has done his work for the past three years.

For quittor, for canker, and thrush the results are invariably good. Permanganate of potash when applied directly to the flesh, does not cause excessive cauterization. The larger the proportion of permanganate used, the denser and firmer is the black crust which is formed; for that reason alone I apply the pure powdered crystals to open joints. Soap and water is necessary to remove the black crust in case of flesh wounds; under the crust the flesh is invariably healthy and firm. Wounds may be left for two or three days without dressing, and will keep sweet. I avoid allowing the dressing to get on the skin by smearing vaseline around the wound; that also prevents any discharge from destroying the hair. I do not, of course, apply the dressing to surgical wounds.

OVARIAN ABSCESS IN A MARE.

BY CAPTAIN BARRY, 2nd LIFE GUARDS.

A BLACK mare, aged 10, of B squadron, 2nd Life Guards, stationed at Regent's Park Barracks, died suddenly on January 30, 1908. The animal had been in the riding school at work for one hour in the morning from 10 to 11, when she apparently did her work exceptionally well, and was particularly exuberant in spirits. She was watered and fed during the day, and cleared up the manger at last feed, 6.55, and finished her 3 lb. of hay. At 10.50 p.m. the mare was seen to run back in her stall, pitch forward, and fall, dying soon afterwards.

Post-mortem.—About 4 gallons of sanguineous fluid in the peritoneal sac; all the organs, although slightly pale, were healthy; the liver had many calcified echinococcus cysts under the capsule; the lymphatic gland also had one about the size of a pigeon's egg. In the region of the left ovary the connective and surrounding tissues were deeply infiltrated with a sanguineous and œdematous fluid, looking as if great bruising of the tissues had taken place. The right ovary was greatly swollen, soft, and gelatinous. The left ovary was one large mass of soft blood-stained gelatinous material.

In my opinion an abscess had formed in the broad ligament of the left ovary, which had burst, causing the hæmorrhage, and had set up the acute peritonitis from which the horse succumbed practically within an hour.

The exuberance of spirits I attribute to the distended ovary setting up a sexual excitement.

Abstracts and Reports.

SANITARY MILK PRODUCTION.

Report of the Milk Conference Appointed by the Commissioners of the District of Columbia.*

The conference called by the Commissioners to deliberate with respect to the milk supply of the District of Columbia, and to advise the Commissioners what future steps should be taken to improve said milk supply, and what amendment should be made to the Commissioners' Bill for the better regulation of the milk business, respectfully submits the following report:—

The conference has had numerous meetings, and through the committees appointed for that purpose has collected information bearing upon the sanitary aspects of the milk supply, and particularly upon the sanitary aspects thereof in so far as they relate to infant life, and to the relations existing between milk and the causation of typhoid fever, diphtheria, scarlet fever, and other communicable diseases; and through other committees the conference has collected information with respect to the commercial aspects of the milk business, and upon the supervision and control thereof by the Government.

It is unnecessary, particularly in view of the extensive and detailed information embodied in the appended committee reports, to describe here at any length the sanitary importance of milk as an article of diet. Here and elsewhere throughout the report when the word "milk" is used it is to be accepted as including all forms of milk, unless it would be manifestly improper to do so, and as including cream; and for the sake of brevity, and to avoid repetition, it may be said here that generally the facts and principles relating to and governing the sanitary features of the milk supply are applicable, other things being equal, to ice cream.

Classification of Milk.

In order that the milk supply of the district may be pure, it must come from healthy cows, properly fed, that are neither about to calve nor have recently calved. The milk from these cows must be drawn in a cleanly manner and be promptly cooled. All persons engaged in handling milk must be free from communicable diseases and of cleanly habits. All receptacles into which the milk passes, and all utensils and apparatus used in handling it, must be perfectly clean, and the milk, after having been promptly cooled, must be kept cool until delivered to the consumer. Actually to attain ideal conditions with respect to milk is difficult and expensive, and adds materially to the cost of the milk, and therefore to the selling price; but to undertake earnestly to approximate such conditions is less difficult and less expensive, and for practical purposes may be regarded as yielding a reasonably satisfactory and reasonably safe milk. The conference recommends that there be recognised by law three grades of milk, as follows:—

Class 1. *Certified Milk.*—The use of this term should be limited to milk produced at dairies subjected to periodic inspection, and the products of which are subjected to frequent analyses. The cows pro-

* Forming portion of a circular issued by the Bureau of Animal Industry.

ducing such milk must be properly fed and watered, free from tuberculosis, as shown by the tuberculin test, and from all other communicable diseases, and from all diseases and conditions whatsoever likely to deteriorate the milk. They are to be housed in clean stables, properly ventilated, and to be kept clean. All those who come in contact with the milk must exercise scrupulous cleanliness, and such persons must not harbour the germs of typhoid fever, tuberculosis, diphtheria, and other infections liable to be conveyed by the milk. Milk must be drawn under all precautions necessary to avoid infection, and be immediately strained and cooled, packed in sterilised bottles, and kept at a temperature not exceeding 50° F. until delivered to the consumer. Pure water, as determined by chemical and bacteriological examination, is to be provided for use throughout the dairy farm and dairy. Certified milk should not contain more than 10,000 bacteria per cubic centimetre, and should not be more than twelve hours old when delivered. Such milk shall be certified by the health officer of the District of Columbia.

Class 2. *Inspected Milk.*—This term should be limited to clean raw milk from healthy cows, as determined by the tuberculin test and physical examination by a qualified veterinary surgeon. The cows are to be fed, watered, housed, and milked under good conditions, but not necessarily equal to the conditions provided for Class 1. All those who come in contact with the milk must exercise scrupulous cleanliness, and such persons must not harbour the germs of typhoid fever, tuberculosis, diphtheria, and other infections liable to be conveyed by the milk. This milk is to be delivered in sterilised containers, and is to be kept at a temperature not exceeding 50° F. until it reaches the consumer. It shall contain not more than 100,000 bacteria per cubic centimetre.

Class 3. *Pasteurised Milk.*—Milk from the dairies not able to comply with the requirements specified for the production of milk of Classes 1 and 2 is to be pasteurised before being sold, and must be sold under the designation "pasteurised milk." Milk for pasteurisation shall be kept at all times at a temperature not exceeding 60° F. while in transit from the dairy farm to the pasteurisation plant, and milk after pasteurisation shall be placed in sterilised containers and delivered to the consumer at a temperature not exceeding 50° F. All milk of an unknown origin shall be placed in Class 3 and subjected to clarification and pasteurisation. No cow in any way unfit for the production of milk for use by man, as determined upon physical examination by an authorised veterinarian, and no cow suffering from a communicable disease, except as specified below, shall be permitted to remain on any dairy farm on which milk of Class 3 is produced, except that cows which upon physical examination do not show physical signs of tuberculosis may be included in dairy herds supplying milk of this class, although they may have reacted to the tuberculin test.

This milk is to be clarified and pasteurised at central pasteurisation plants, which shall be under the personal supervision of an officer or officers of the Health Department. These pasteurising plants may be provided either by private enterprise or by the District Government, and shall be located within the city of Washington.

By the term "pasteurisation," as used herein, is meant the heating of milk to a temperature of 150° F. or 65° C. for twenty minutes, or

160° F. or 70° C. for ten minutes, as soon as practicable after milking, in enclosed vessels, preferably the final containers, and after such heating immediate cooling to a temperature not exceeding 50° F. or 10° C.

No milk shall be regarded as pure and wholesome which, after standing for two hours or less, reveals a visible sediment at the bottom of the bottle.

No dairy farm shall be permitted to supply milk of a higher class than the class for which its permit has been issued, and each dairy farm supplying milk of a specified class shall be separate and distinct from any dairy farm of a different class; the same owner, however, may supply different classes of milk, providing the dairy farms are separate and distinct, as above indicated.

Supervision of the Milk Supply.

In order that the sale of milk in the District of Columbia may be properly supervised, the conference recommends as follows:—

(1) *Regulations.*—That the Commissioners be empowered to make, on the recommendation of the health officer, all such regulations as may be necessary, in their judgment, to safeguard the milk supply of the District of Columbia.

(2) *Increase of Inspection Force.*—That for the purpose of supervision of dairy farms and of the production of milk, inspectors, in addition to the chief inspector hereinafter mentioned, be provided in proportion of at least one for every 100 licensed dairy farms, and that for the purpose of supervising the handling and sale of milk in and about the city the number of inspectors be not less than three.

(3) *Qualifications and Duties of Inspectors.*—That all inspectors be selected because of their special fitness for the work that they are to perform. Not less than one-half of the inspectors of dairy farms should be veterinary surgeons. Appointments should be made by the Commissioners, on recommendation of the health officer, and removals effected at the discretion of the Commissioners. The exact duties and limits of the jurisdiction of each inspector should be fixed, and the work of the inspectors should be supervised by the chief inspector appointed for that purpose, under the direction of the health officer. Every inspector should devote his entire time to the performance of his official duties.

(4) *Salaries of Inspectors.*—That salaries be paid commensurate with the technical skill and experience of the inspectors, to be in the case of the chief inspector not less than $2,000 per annum, with travelling expenses, and in the case of the other inspectors not less than from $1,600 to $1,800 per annum, with travelling expenses.

(5) *Increase of Laboratory Facilities.*—That in connection with the Health Department there be provided facilities for the making of such chemical and bacteriological analyses of milk, and of water from dairy farms and from other places where milk is handled and sold, and for the making of such chemical and bacteriological analyses generally as in the judgmeut of the health officer may be necessary.

(6) *Increase of Clerical Assistance.*—That such additional clerical assistance be provided as may be required to meet the increased demands upon the clerical force of the Health Department that will result if the recommendations of this conference be adopted.

(7) *Establishment of Pasteurising Plant.*—That there be established, by private enterprise if possible, and otherwise by the District Government, plants for the pasteurisation of milk under the immediate supervision of the Health Department.

(8) *Revocation of Licences by Health Officer.*—That the health officer be empowered to suspend and to revoke summarily any licence to produce or sell milk in the district, and any licence to bring milk into the district, if the holder of any such licence violates any of the laws or regulations governing the production and sale of milk or the bringing of milk into the district, in such a manner as, in the judgment of the health officer, to endanger the health of persons consuming the milk produced, sold, or brought in by the holder of such permit.

(9) *Revocation of Licences by Inspectors.*—That any authorised inspector in the service of the Health Department, duly charged with the inspection of places where milk is produced, handled, or sold, be empowered to suspend summarily, for a period not exceeding forty-eight hours, any licence to produce or to sell milk in the district, and any licence to bring milk into the district, if the holder of such licence violates any of the laws or regulations governing the production and sale of milk, or the bringing of milk into the district, in such a manner as, in the judgment of such inspector, to endanger the health of persons consuming the milk produced, sold, or brought in by the holder of such licence; provided that any inspector who wilfully fails in the proper discharge of his duty, or who knowingly makes any false report, or who wilfully and maliciously, and without probable cause, threatens to suspend, or suspends, the licence of any producer or dealer in milk, shall be guilty of a misdemeanour, punishable by a fine, or by imprisonment, or by both.

(10) *Identification of Dairy Cattle.*—That all cows on dairy farms producing milk for the District of Columbia be tagged, tattooed, or otherwise marked for purposes of identification.

(11) *Tuberculin Testing or Pasteurisation Required.*—That all milk produced for use in the District of Columbia shall either come from cattle free from tuberculosis as shown by the tuberculin test, which tuberculin test shall be repeated at least once every year, or be subjected to pasteurisation under the supervision of the Health Department in case the herd is not tuberculin tested.

(12) *New Dairy Cattle to be Tuberculin Tested.*—That hereafter no addition shall be made to any herd producing milk for use in the District of Columbia, whether such herd has or has not been tuberculin tested, unless the cattle so added have been tested with tuberculin and found to be free from tuberculosis.

(13) *New Licentiates to have Herds Tuberculin Tested.*—That hereafter no licence shall be granted to produce milk for use in the District of Columbia unless the herd by which such milk is to be produced has been found by the tuberculin test to be free from tuberculosis.

(14) *Milk from Diseased Cattle not to be Sold.*—That the milk of cattle suffering from any disease of the udder, or suffering from anthrax, rabies, gastro-enteritis, septic conditions, or clinical symptoms of tuberculosis, shall not be utilised as human food, even though the milk be pasteurised. Nor shall milk taken from cows during the period beginning fifteen days before and ending five days after parturition, or from cows receiving any deleterious medicament or foodstuff, be, even though pasteurised, used as food for human beings.

(15) *Physical Examinations of Dairy Cattle.*—That the veterinary inspectors of the Health Department make frequent visits to dairy farms having untested herds so as to discover as early as possible all advanced cases of tuberculosis (clinical cases of tuberculosis), and particularly tuberculosis affecting the udder.

(16) *Water Supply of Dairy Farms and Dairies.*—That particular attention be given to the water supply of dairy farms and of dairies, with special reference to the location and construction of such wells, cisterns, and springs as are used in connection with the business.

(17) *Equipment of Dairies and Dairy Farms.*—That every dairy farm and every dairy be equipped with all necessary appliances for cleaning and scalding or otherwise sterilising all receptacles, utensils, and apparatus used for the handling of milk, and with all necessary appliances properly to cool and to keep cool milk awaiting delivery.

(18) *Definition of "Dairy" and General Restrictions with respect thereto.*—That every place where milk is sold be deemed a dairy for all purposes whatsoever, and that the sale of milk in grocery stores, bakery shops, and other similar places be prohibited, except when the milk is sold and delivered in the original package in which it has been received. The production of milk for sale and the sale of milk, wherever conducted, should be maintained absolutely and entirely apart from all household operations.

(19) *Delivery of Milk in Bulk.*—That all receptacles containing milk in quantities exceeding one quart, for delivery to customers, be sealed in a manner satisfactory to the health officer before being placed upon the delivery waggon, and be kept so sealed until after delivery, except as it may be necessary to open them for the purpose of official inspection and sampling.

(20) *Method of Collecting Samples.*—That whenever a sample of milk is collected for analysis the inspector shall divide the sample into two parts, placing each part in a proper container and sealing such container with a proper seal, and then deliver one such sealed container to the vendor for such purposes as he may desire, the dividing, bottling, and sealing of the samples to be done when practicable in the presence of the vendor or his agent.

(21) *Condemnation of Milk.*—That immediate seizure, and denaturing with some odorous substance or colouring matter, of milk found to contain preservatives, or to be in such condition as to render its sale unlawful, be authorised by law.

(22) *Publication of Results of Examinations and Analyses.*—That, at least pending the time which must necessarily elapse before the production of certified milk is begun on a commercial scale, the health officer be authorised to publish from day to day, as a result of his inspections, a list of dairies and dairy farms from which the milk supply is drawn, giving the rating of each dairy and of each dairy farm, and the chemical composition and bacterial count of each sample of milk analysed.

(23) *Certification of Milk.*—That the health officer be authorised to advertise for dairies and dairy farms the proprietors of which may be willing so to modify their barns, stables, &c., if necessary, as to procure a certificate from him showing that they are producing what is hereinbefore described as certified milk.

(24) *Modified Milk.*—That for the purpose of procuring modified

milk for infants and for persons in ill-health, according to the prescriptions of physicians, the Milk Commission of the Medical Society of the District of Columbia be requested to procure the establishment of a laboratory, under its supervision, in which only certified milk shall be used, and in which, by the use of a separator or otherwise, milk of a definite chemical composition may be obtained from certified milk in harmony with the physicians' prescriptions relating thereto.

(25) *Refrigerator-car Service.*—That an effort be made to procure the establishment of a refrigerator-car service for the transportation of milk into the District of Columbia from May 1 to December 1, and to provide for cooling rooms or devices at all stations where milk is held awaiting the arrival of milk trains.

DUTIES OF CONSUMERS.

(1) *Use of Certified Milk to be Urged.*—That parents and guardians be urged to use only certified milk, at least as the food for infants under the age of 3 years.

(2) *Popular Education with Reference to Sanitary Relations of Milk.*—That systematic instruction with reference to the sanitary relations of milk as an article of diet, and of other foods, be made a part of the curriculum of the public schools of this district; that popular articles be frequently prepared for the press; that lectures and demonstrations be given; that pamphlets, in plain language, be prepared by the health officer for general distribution; and that rules and suggestions, accompanied by statements of the reasons therefore, be placed in the hands of dairymen and dairy attendants.

(3) *Home Inspection of Milk.*—That consumers of milk be urged to patronise no milk dealer whose milk, after standing for two hours or less, reveals a visible sediment at the bottom of the bottle, as such a sediment is evidence of dirty habits, extremely suggestive of danger, and entirely preventable by clean, decent methods, without greatly increasing the cost of the milk. The consumer should furthermore subject the milk that he receives, unless it come from a tuberculin-tested herd and from a source otherwise above suspicion, to a process of purification by bringing it to the boiling point, cooling it immediately, and thereafter keeping it on ice.

In conclusion, the conference desires to say that it fully recognises the fact that the efforts that are now being made to improve the milk supply may lead to an increase in the price of milk, but the conference feels that if the increase in the cost is accompanied, as presumably it will be, by a diminution in the dangers that now accompany the use of milk, no one should begrudge the money spent for the safety to life and health that results therefrom.

The conference will carefully consider the legislation heretofore proposed by the Commissioners for the improvement of the milk supply, and will suggest to the Commissioners, at a later date, such modifications thereof as seem to the conference desirable.

MILK SEDIMENTS OR DIRTY MILK IN RELATION TO DISEASE.

BY GEORGE M. KOBER, M.D., PROFESSOR OF HYGIENE, SCHOOL OF MEDICINE, GEORGETOWN UNIVERSITY.

The Nature and Danger of Sediments.

Every consumer of milk has doubtless observed the presence of more or less foreign matter at the bottom of the bottle in which it is kept; indeed, this is a matter of such common occurrence that it hardly excites our attention, and many are disposed to look upon it as a matter of course. Professor Soxhlet, of Munich, was perhaps the first to point out that these deposits are largely made up of the excrementitious matter from the cow, which, adhering to the udder of the animal, gained access to the bucket during the act of milking. These facts were demonstrated by Professor Renk at the International Medical Congress held at Berlin in 1890. If these sediments are subjected to microscopical examination we will find that they are composed of epithelial débris, hairs of the cow, organic and inorganic dust particles, excrementitious matter, vegetable fibres, and bacteria, fungi, and spores of every description, fully 90 per cent. of the germs being fæcal bacilli—all of which is not only disgusting, but extremely suggestive of danger. The number of micro-organisms is largely increased, and we know that under a suitable temperature bacterial development and consequent decomposition are materially hastened in such a medium.

The greatest danger from milk of this class is the possible presence of ptomaines or toxins produced by certain saprophytic germs from the albuminoids of the milk. Professor Vaughan, of Ann Arbor, Mich., in 1885 isolated a poison called tyrotoxicon, which is one of the causes of the toxic symptoms in cases of milk poisoning, cheese, and ice-cream poisoning. The presence of the very filth referred to, a summer temperature, and the pernicious habit of placing the milk before cooling in cans and bottles perhaps dirty, besides, constitute favourable environments for the development of this and analogous poisons.

Dr. Kober, in 1895, collected a number of cases of poisoning by milk, cheese, ice-cream, and cream puffs, the symptoms in these cases being nausea, vomiting, dryness, and a sense of constriction of the throat, vertigo, colic, and purging, with a tendency in some cases to collapse, in others to numbness of the extremities and to stupor.

The views of Vaughan, Booker, Escherich, Harrington, Kober, and others on the relation of saprophytic germs and toxins to cholera infantum and the summer diarrhœas in bottle-fed children are gaining ground, and will doubtless lead to great reform in the management of dairies.

Impure Milk a Cause of Infantile Mortality.

The following facts present strong presumptive evidence on the relation of impure milk to infantile mortality:—

(1) About one-fourth of all the children born in the District of Columbia, and about one-sixth in the country at large, perish before the completion of the first year. Of the twelve months during the first year of life the first, second, third, fourth, and twelfth months furnish

the highest mortality. The deaths during the first four months are largely due to imperfect development and exposure, while the jump from the fourth to the twelfth month is quite suggestive, as it is the usual period of weaning, with its attending dangers from digestive diseases incident to artificial feeding.

(2) Nearly one-half of all the deaths in children under 1 year of age are caused by gastro-enteric diseases, chiefly infantile diarrhœa, and this points with more than mere suspicion to the fact that the morbific agent is introduced into the body with the food. Since the enactment of a pure-milk law in 1895, the percentage of deaths in children under 1 year of age to the total deaths of all ages has been reduced from 26·94 to 18·13 in 1904.

(3) The most frightful mortality rates are everywhere furnished by the hand or bottle-fed children, indicating that impure cow's milk and improper care and feeding are the chief primary causes.

Professor Kehrer informs us that of the 8,329 infants who died in Munich during 1868-70, 7,098, or over 85 per cent., had been hand or bottle-fed. Of the 4,075 infants that died in 1903, 83·3 per cent. were artificially fed. In Berlin, of the 41,383 infants that perished during 1900-04, over 90 per cent. had been artificially fed. In Paris, according to Monat, the rate is from 70 to 75 per cent. In 1903 the Health Department of the District of Columbia investigated 260 infantile deaths with reference to feeding, and ascertained that 88·49 per cent. of the children had been artificially fed.

In the face of the startling arguments against artificial feeding, mothers should hesitate to subject their offspring to such terrible risks, and the State must take what precautions it can to stop this slaughter of the innocents. The Washington market milk compares very favourably with the average German or English milk; but every community has a right to expect milk free from dirt and filth, and hence the need of a law or regulation "that there shall be no visible sediment on standing two hours."

It may be urged that all such modern innovations involve unnecessary hardship, but it should be remembered that by attacking all the various factors concerned in the causation of the disease we may hope for the best results. The reduction in the general mortality in the registration area of the United States from 19·6 in 1890 to 16·2 per 1,000 shows what may be accomplished by preventive medicine and sanitation.

Milk as a Carrier of Infectious Diseases.

Milk may acquire infective properties after it leaves the udder of the animal. Numerous instances have been observed in which outbreaks of typhoid fever, scarlet fever and diphtheria, by their sudden and explosive character, affecting families living in streets and localities supplied by the same milkman, naturally pointed to the milk supply as a common cause. Dr. Michael Taylor, however, was the first physician (in 1857) to point out definitely that cows' milk might serve as a medium of spreading typhoid fever from a dairy where the disease prevailed. In 1867 he also showed that scarlet fever might be distributed in the same way. In 1877 Jacob traced a diphtheria epidemic at Sutton, England, to the milk supply, and in 1872 Macnamara traced an outbreak of chlolera at Calcutta, India, to an infected dairy. These facts

could not fail to sharpen the powers of observation in others, and in consequence similar outbreaks were more frequently reported, so that Dr. Kober was enabled to present to the International medical Congress, held in Paris in 1900, the history of 195 outbreaks of typhoid fever, ninety-nine of scarlet fever, and thirty-six of diphtheria, all traceable to the milk supply.

It has been demonstrated that disease germs may not only survive, but in many instances actually proliferate in the milk, and it is not a difficult matter to point out the many ways by which these germs gain access, especially when some of the employees are also engaged in nursing the sick, or are suffering themselves from some mild infection while continuing their duties, or are convalescent from disease, and thus infect the milk in handling it.

It is quite conceivable how animals, in wading in filth and sewage-polluted water, may infect the udder, and through it the milk, with the germs of typhoid fever. We can also appreciate how infected water may convey the germs when used for washing the utensils, or in deliberate adulterations. Infection may also take place through the agency of scrubbing-brushes, dishcloths, flies, and exposure to infected air.

Milk-borne Typhoid Fever Epidemics.

Of the 195 epidemics of typhoid fever tabulated by Dr. Kober, there is evidence in 148 of the disease having prevailed at the farm or dairy. In sixty-seven instances the infection probably reached the milk by percolation of the germs into the well water with which the utensils were washed; in sixteen of these the intentional dilution with water is a matter of evidence. In three instances the *Bacillus coli communis* and the typhoid germs were demonstrated in the suspected water. In seven instances infection is attributed to the cows wading in sewage-polluted water and pastures; in twenty-four instances the dairy employees also acted as nurses; in ten instances the patients, while suffering a mild attack, or during the onset of the disease, continued their work; and those who are familiar with the personal habits of the average dairy hands will have no difficulty in surmising the manner of direct digital infection. In one instance the milk tins were washed with the same dishcloth used among the fever patients. In two instances dairy employees were connected with the night-soil service, and in another instance the milk had been kept in a closet in the sick room.

In the recent exhaustive investigation conducted by the Public Health and Marine Hospital Service, the Commission definitely traced eighty-five of the 866 cases of typhoid fever in the district to the use of infected milk.

Milk-borne Scarlet Fever Epidemics.

Of the ninety-nine epidemics of scarlet fever the disease prevailed in sixty-eight instances at the dairy or milk farm. In six instances persons connected with the dairy either lodged in or had visited infected houses. In two instances the infection was conveyed by means of infected bottles or milk-cans left in scarlet fever houses. In seventeen instances the infection was conveyed by persons connected with the milk business while suffering or recovering from the disease, and

in at least ten instances by persons who acted as nurses while handling the milk. In three instances the milk had been stored in or close to the sick room. In one instance the cans had been wiped with an infected cloth. (In nineteen instances the infection was attributed to disease of the milk cows, such as puerperal fever and inflammation of the udder and teats; but these outbreaks were probably not genuine scarlet fever, but a so-called streptococcus or staphylococcus infection, the symptoms of which closely resemble those of scarlet fever.)

Milk-borne Diphtheria Epidemics.

Of the thirty-six outbreaks of diphtheria there is evidence that the disease prevailed at the dairy or farm in thirteen instances. In three instances the employees continued to handle the milk while suffering themselves from the disease. In twelve instances the disease is attributed directly to the cows having inflammatory conditions of the teats and udders. (These instances, however, may be regarded as typical examples of streptococcus and staphylococcus infection, giving rise to a form of follicular tonsillitis or pseudo-diphtheria, often difficult to distinguish clinically from true diphtheria or scarlet fever.)

In addition to the foregoing diseases there are recorded a limited number of outbreaks of cholera which have been traced to milk infection through various channels already referred to, chiefly in handling with infected fingers, by contaminated water, and the agency of flies. There is also reason to assume that the organism of cholera infantum and the infectious agent of small-pox may find in milk a suitable medium for growth and transmission.

It is interesting to note that of the 330 epidemics analysed by Dr. Kober, 243 have been recorded by English authors, fifty-two by American, fourteen by German, eleven by Scandinavian, and five each by French and Australian writers. This is probably due to the fact that the English and Americans usually consume raw milk, while on the Continent the milk is rarely used without being boiled.

After the recital of numerous epidemics and milk-borne diseases we need hardly insist upon the necessity of compulsory notification of all infectious diseases, and that milk should not be permitted to leave a farm, dairy, or milk shop during the existence of any of these diseases among the inmates or employees, nor should the latter be permitted to reside in or visit infected houses while engaged in the milk traffic without permission from the Health Department. The farmer or retailer should in fact be prepared by previous instructions to guard the milk supply from these sources of danger, and should call upon the authorities for an immediate inspection. To prevent great loss incident to these restrictions they may be modified so as to use the milk after proper sterilisation under the direction of the Health Department. There is nothing strained in the requirements of the proposed legislation, and by its enforcement we may hope to obtain such a standard of milk as will not only effect a decided reduction in infantile mortality, but will render the dissemination of infectious diseases through the milk supply a matter of history only. Until this is accomplished we should patronise only such dealers as sell "certified milk" or subject the milk to pasteurisation, or we should simply bring the milk to the boiling point in the household, and, after cooling, keep it on ice; this will not make bad milk good, but it will at least destroy its infectiousness.

SANITARY INSPECTION OF DAIRIES AND DISTRIBUTING DEPÔTS.

BY ED. H. WEBSTER, M.S., CHIEF OF THE DAIRY DIVISION, BUREAU OF ANIMAL INDUSTRY.

Bad Conditions Found on Investigation.

A systematic sanitary inspection of dairy farms and milk-distributing depôts cannot be too strongly recommended. Recent investigations in various parts of the country have conclusively shown that the conditions on many of the farms and at many milk depôts are anything but ideal; they are, in fact, about as bad as it is possible to conceive. Stables are poorly lighted, many having no windows whatever, and ventilation is not provided for. Little attention is paid to floors, ceilings, walls, or stable yards. Swine, horses, and poultry are often found in the same barn with the cows. Manure is not removed, or, when removed, is thrown through an opening in the wall or just outside the door, frequently near the milk room. The necessary appliances for sterilising and cooling in the milk room are often lacking, making it impossible to properly wash and sterilise pails, cans, bottles, and other appliances, or to properly cool and hold at a low temperature the milk before delivery.

Milk dealers, as a rule, have more regard for sanitation and have better appliances than are to be found on the average farm, but some common practices are deplorable. Very few dealers have appliances for sterilising bottles. Drivers not infrequently bottle milk on the waggon, using bottles that have come from some household and have not been sterilised. Waggons and appliances are not kept in as sanitary condition as should be required. A number of dealers do not separate business from home operations. Help of unknown origin and doubtful habits is employed and is a constant menace to purity of milk. Up to April 5 of the present year a careful examination had been made, under the supervision of the Department of Agriculture, of 727 dairies supplying milk to the District of Columbia. This examination took into account only the sanitary condition of the farms and did not include the health of the animals nor an examination of the water supply, except as these points would be revealed by observation on the premises at the time of inspection. The average rating of these 727 dairies, on the basis of 100 as perfect, was 45·1 per cent. Thirty-three were above 75 per cent., 278 between 50 and 75 per cent., and 407 scored less than 50 per cent. The tuberculin test had been applied to but four of the herds, though many proprietors stated that the test would be applied in the near future. With tested herds and a pure water supply assured, this showing would be deplorable, but under existing conditions of probable water contaminations and but four out of 727 herds tuberculin tested, what shall be said?

A similar study has been made of conditions in the city, and the situation there is not nearly so bad as in the country. Seventy-three milk depôts were examined, of which forty-six were rated above 75 per cent., and twenty-seven between 57·5 and 75 per cent.

Recommendations.

The situation in Washington is not different from that confronting the Health Departments of most of the cities of any size throughout the country. The public is gradually awakening to the fact that these

conditions must be changed. In order to bring about these changes within the District of Columbia, the following recommendations are made :—

(1) That a sufficient number of inspectors be employed, so that each inspector shall have not over 100 farm dairies, and at least three inspectors shall be employed to cover milk stores. That one of these inspectors shall be at the same time chief dairy inspector, and shall receive a salary of $2,000 per annum and travelling expenses.

(2) That the inspectors so employed shall devote their entire time to the work of inspection, and that the salaries be commensurate for the technical skill and experience of the men employed—not less than $1,600 to $1,800 per year and travelling expenses.

(3) That these men shall have technical training in the production and handling of milk, and that at least five of every ten inspectors employed to inspect farms shall be skilled veterinarians.

(4) That the health officer shall have full authority to make rules and regulations and enforce the same, so as to safeguard the milk supply of the District from contamination through carelessness, ignorance, or malicious intent.

(5) That the health officer or any authorised inspector shall have authority to revoke instantly the licence or right to sell milk in the city if provisions of such regulations are not complied with, where, in his judgment, such violation endangers the health of the consumer.

Twenty-one Suggestions.

The following are suggested as ideal conditions, which might be used as a basis for rules and regulations :—

The Cows.

(1) Have the herd examined frequently by a skilled veterinarian. Promptly remove any animals suspected of being in bad health. Never add an animal to the herd until certain it is free from disease, especially tuberculosis.

(2) Never allow a cow to be excited by hard driving, abuse, loud talking, or unnecessary disturbances ; do not unduly expose her to cold or storms.

(3) Clean the entire body of the cow daily. Hair in the region of the udder should be kept short. Wipe the udder and surrounding parts with a clean, damp cloth before milking.

(4) Do not allow any strong-flavoured feed, such as garlic, cabbage or turnips, to be eaten except immediately after milking.

(5) Salt should always be accessible.

(6) Radical changes in feed should be made gradually.

(7) Have fresh, pure water in abundance, easy of access, and not too cold.

The Stables.

(8) Dairy cattle should be kept in a stable where no other animals are housed, preferably without cellar or storage loft. Stable should be light (4 square ft. of glass per cow) and dry, with at least 500 cubic ft. of air to each animal. It should have air inlets and outlets,

so arranged as to give good ventilation without draughts of air on cows. The presence of flies may be reduced by darkening the stable and removing the manure as directed below.

(9) The floor, walls, and ceilings of the stable should be tight, walls and ceilings being kept free of cobwebs and whitewashed twice a year. There should be as few dust-catching ledges and projections as possible.

(10) Allow no musty or dirty litter or strong-smelling material in the stable. Store manure under cover at least 40 ft. from the stable in a dark place. Use land plaster daily in gutter and on floor.

Milk-House.

(11) Cans should not remain in the stable while being filled. Remove the milk of each cow at once from the stable to a clean room; strain immediately through cotton flannel or absorbent cotton; cool to 50° F. as soon as strained; store at 50° F. or lower. All milk-houses should be screened.

(12) Milk utensils should be made of metal, with all joints smoothly soldered, or, when possible, should be made of stamped metal. Never allow utensils to become rusty or rough inside. Use milk utensils for nothing but handling, storing, or delivering milk.

(13) To clean dairy utensils use pure water only. First rinse the utensils in warm water, then wash inside and out in hot water in which a cleansing material has been dissolved; rinse again; sterilise with boiling water or steam; then keep inverted in pure air that may have ready access, and sun if possible, until ready for use.

Milking and Handling Milk.

(14) The milker should wash his hands immediately before milking, and should milk with dry hands. He should wear a clean outer garment, which should be kept in a clean place when not in use. Tobacco should not be used while milking.

(15) In milking be quiet, quick, clean, and thorough. Commence milking at the same hour every morning and evening, and milk the cows in the same order.

(16) If any part of the milk is bloody, stringy, or unnatural in appearance, or if by accident dirt gets into the milk-pail, the whole mess should be rejected.

(17) Weigh and record the milk given by each cow.

(18) Never mix warm milk with that which has not been cooled, and do not allow milk to freeze.

(19) Feed no dry, dusty feed just previous to milking.

(20) Persons suffering from any disease, or who have been exposed to a contagious disease, must remain away from the cows and the milk.

(21) It is needless to say that the shorter the time between the production of milk and its delivery, and between delivery and use, the better will be the quality of the milk.

THE WATER SUPPLY OF DAIRY FARMS.

BY G. LLOYD MAGRUDER, M.D., EMERITUS PROFESSOR OF MATERIA MEDICA AND THERAPEUTICS, SCHOOL OF MEDICINE, GEORGETOWN UNIVERSITY.

Danger from a Polluted Water Supply.

The influence of a polluted water supply has long been recognised as a most potent cause of disease. Many virulent epidemics have been directly traced to this origin. The literature upon this subject is so full of instances that it is needless to cite examples. Immediate closure of such water supplies in cities, when sewage bacteria have been detected, has been universally recommended. The recent report to the Commissioners of the District of Columbia by the United States Bureau of Public Health and Marine Hospital Service lays special stress upon this point.

How much more is this danger augmented when such bacteria are found in the water supply of the dairy farms! It is well known that few farms have the proper facilities for boiling the water that is used for washing the hands of the employees, the dairy utensils, and the udders of the cows. Polluted water readily contaminates the milk, which contamination is rapidly increased by the multiplication of the bacteria when the temperature is above 50° F.

It is a well-known fact that persons who have once had typhoid fever may continue for an indefinite period to be carriers of the bacillus. The recent investigations of Dr. Soper, of New York, who isolated the bacillus of typhoid from the fæces of a cook who refused to give her history as to having had the disease, showed seven outbreaks of typhoid fever, giving twenty-six cases, with one death, in families in which this cook had been employed. The common custom which prevails in rural communities of depositing human excreta upon the surface of the ground, frequently in close proximity to residences and barns, has been repeatedly noticed. Even in cases of disease this has been done without previously disinfecting the discharges.

Bulletin 93 of the Bureau of Animal Industry, United States Department of Agriculture, recently issued, reports the isolation of the tubercle bacillus from the fæces of cows and the production of tuberculosis by inoculating guinea-pigs with the bacillus thus isolated. In healthy cows, tuberculin tested, these same results were obtained after giving them water to drink in which tubercle bacilli had been placed.

In view of the possible presence of the bacilli of typhoid fever and tuberculosis, the question of sewage bacteria in the water supplies of the dairy farms is a much more serious matter than was formerly considered. The knowledge that typhoid fever was two and one-half times more prevalent in 1906 in the counties of Maryland than in the city of Baltimore, and the evidence, as stated elsewhere in this report, that 148 out of 195 epidemics of typhoid fever attributed to milk were directly traced to the dairy farm, add to the seriousness of these conditions.

It has been observed that many wells, springs, and cisterns are loosely or not at all covered, poorly protected from surface drainage, and, in numerous cases, are located in close proximity to the barnyard or the household privy, at times even in places that catch the drainage from the same.

Examinations of Water Supplies of Dairy Farms

The examinations made by officials of the Department of Agriculture during November and December, 1906, in comparatively cool weather, showed that of the sixty water supplies of dairy farms taken at random in Maryland, Virginia, and the District of Columbia, sixteen contained less than 500 bacteria per cubic centimetre, and were free from *Bacillus coli:* six below this number contained the colon bacillus. The remaining forty-four water supplies contained bacteria up to 27,200. Of these forty-four, twenty-one contained the colon bacillus.

These tests warranted the classification of these water supplies as follows: Sixteen good, fifteen fair, seventeen suspicious, and twelve unfit for use. From Professor Sedgwick's classification, forty-four would have been considered polluted. In a recent letter he says: "I should say that all of the wells under consideration which had more than 100 bacteria per cubic centimetre were to be classed as suspicious, and that those having 500 or over were in all probability polluted."

The results of these examinations confirm the wisdom of the recommendation, made in 1894 by the committee of the Medical Society of the District of Columbia upon the prevalence of typhoid fever, for the careful inspection of all dairy farms for all possible sources of infection, including the water supply, and prove that repeated chemical and bacterial tests should be made of the water supply of every dairy farm supplying milk to the city of Washington. They afford another proof of the imperative need of a well-equipped chemical and bacteriological laboratory for the health officer.

How to Remedy Insanitary Conditions.

Fortunately many of these insanitary conditions upon the farm can be readily and easily remedied by the farmer himself by the exercise of a little care, and at a very trifling cost.

All water, except that above suspicion, used for dairy purposes should be boiled. Those engaged in the handling of dairy products should be required to observe the greatest care as to the cleanliness of their clothes and persons. Frequent washing of the hands should be practised. The source of the water supply should be at least 50 ft. from any possible infection, and a greater distance if in line of drainage from any infection.

The wells, springs, and cisterns should be carefully walled and covered to protect them from sewage, drippings, and dust. A well-built coping, extending a foot or more above the ground, would be very effectual. Preferably deep-driven wells should be used when possible. Owing to the inclination of the rock formation in the vicinity of Washington, D. C., these are not always absolutely reliable. When a well is found to be polluted, it should be thoroughly cleaned and properly disinfected.

All fæcal discharges should be deposited in a safe place, and those from fever cases, in addition, should be intelligently disinfected.

Since freezing does not immediately kill bacteria, careful supervision should also be observed over the supply of water and the location of iceponds from which ice is obtained for household and dairy purposes.

By observing these simple precautions, which would in no way be a hardship to the producers, much would be accomplished toward securing a better milk supply.

THE INTERNATIONAL CONGRESS ON TUBERCULOSIS.

THERE has come to hand the Preliminary Announcement of the International Congress on Tuberculosis, which is to meet at Washington, U.S.A., from September 21 to October 12, at the invitation of the American National Association for the Study and Prevention of Tuberculosis.

The International Congress will be divided into seven sections, as follows:—

(1) Pathology and Bacteriology.

(2) Clinical Study and Therapy of Tuberculosis: Sanatoria, Hospitals, and Dispensaries.

(3) Surgery and Orthopædics.

(4) Tuberculosis in Children: Etiology, Prevention, and Treatment.

(5) Hygienic, Social, Industrial, and Economic Aspects of Tuberculosis.

(6) State and Municipal Control of Tuberculosis.

(7) Tuberculosis in Animals and its Relation to Man.

The names of the prominent American doctors who have been appointed President, Vice-Presidents, and Secretary of the respective Sections are added.

The Section work of the Congress will be done in the week between September 28 and October 3. During the three weeks September 21 to October 12 there will be a Tuberculosis Exhibition, and a course of special lectures by distinguished men. Clinics and demonstrations will also be arranged for.

A list of the awards of the Committee is given, and mention is made of the medal which is to be struck in commemoration of the auspicious event.

The membership of the Congress is of two classes, "active" and "associate," of which details of information are given.

In each country three persons have been asked to serve as the organising nucleus of a National Committee, and a list of the members, not, however, yet complete, of these National Committees is appended, and another list of the members of the American State Committees.

Reviews.

A TREATISE ON ELEPHANTS, THEIR TREATMENT IN HEALTH AND DISEASE. By Major G. H. Evans, F.L.S., Superintendent Civil Veterinary Department, Burmah. Published by Superintendent Government Printing, Rangoon, Burmah. 262 pages. 37 Illustrations. Third Edition. Price, Rupees 3-8-0 (5s. 3d.)

THE author states in the preface that he started with the idea of revising a small pamphlet on the elephant by Mr. M. J. Slymm, Deputy Conservator of Forests, Burmah, at the request of the Burmese Government, but that, as the work proceeded, he became aware of the magnitude of the task he had undertaken, and came to the conclusion that he had better produce an entirely new book.

Little is known of the habits of elephants in health, and the

scientific knowledge as to their diseases is *nil*. It is true that some pamphlets have appeared, the best known being those of Dr. Gilchrist, Captain Hawkes, and Veterinary Surgeon J. H. Steel, but Dr. Gilchrist's was published nearly a century ago. Captain Hawkes was a layman without any medical knowledge, and Veterinary Surgeon Steel never had any practical knowledge of the animal in his native jungles. Major Evans has enjoyed special advantages, and in Burmah is acknowledged to be an expert.

He has resided in Burmah for over eighteen years, knows every inch of it, is a fluent Burmese scholar, and a renowned sportsman, having with his own rifle bagged more elephants than any other man in the Province. With such exceptional opportunities it would indeed be odd if he did not pile up a quantity of elephant lore, and he has made the most of his chances, as a good sportsman and naturalist would do. The results of his almost life-long experiences are contained in the volume under review.

It contains seventeen chapters:—(1) General uses, supply, age, height, marks of identification, value, purchase, idiosyncrasies, sale, breeding, pregnancy, parturition, milk. (2) Attendants and their duties, management, natural fodder, gear, pack gear, miscellaneous, runaway elephants, grazing, quicksands, mounting, crossing rivers, bathing, restraint, to secure for operations, destruction. (3) Anatomy of the elephant. (4) Causes and prevention of disease, general treatment of sickness, indication of ill-health. (5) Anthrax, elephant pox, surra, foot-and-mouth disease, blood poisoning, rabies, tetanus, epidemic pneumonia, rheumatism. (6) Heart, pulse, bleeding. (7) Nervous system. (8) Respiratory system. (9) Urinary system. (10) Digestive system. (11) Internal parasites. (12) Liver. (13) Diseases of the eye. (14) Temporal glands, Musth. (15) Skin wounds, abrasions, ulcers and special injuries, external parasites. (16) Sprains, fractures, cramp. (17) Weights, measures, preparation and modes of administering medicines, instruments.

Amongst the appendices is a list of diseases &c., with their Hindustani and Burmese names; a list of drugs, native and European, with the vernacular equivalents, and a table showing the amount of work elephants can do in various localities under different conditions. The illustrations are from original drawings and photographs. Contrary to the general idea, Major Evans gives positive proof that the elephant breeds in captivity; he also explodes the various stories as to the height of the animal, as, out of many hundreds measured, the largest is one the property of the Bombay and Burmah Trading Corporation, that measures 9 ft. 6 in. at the shoulder. The average age of the elephant is between 80 and 150 years, but he does not reach maturity till 25.

The book is a valuable one, and is the first to let daylight into one of the dark places of veterinary medicine; in proof thereof it need only be mentioned that it has already been translated into French ("Traité sur les Eléphants, leurs Soins Habituels, et leur Traitement dans les Maladies. Par le Capitaine vétérinaire G. H. Evans, A.D.V. Surintendant du Département vétérinaire civil de la Birmanie, auteur d'un 'Manuel sur les Maladies du détail et des Poneys' (en anglais) et 'Veterinary Materia Medica' (en birman) &c., &c. Traduit de l'anglais avec autorisation de l'auteur par Jules Claine, Consul de

France en Birmanie. Paris: librairie C. Reinwald Schleicher Frères et Cie. Éditeurs, 15, Rue des Saints-Pères, 1904), and is the standard work on the subject in the French Indo-Chinese Colonies in the Far East.

The third edition is, we understand, already exhausted, but it is to be hoped that the Indian Government will offer sufficient inducement to Major Evans to bring out another revised one, as it is the work of a man who has had practical dealings with elephants, not merely as a veterinary surgeon, but as a keen sportsman and skilled naturalist.

In conclusion, we must confess that the sight of Major Evans's book has given us an unpleasant jar. At the moment we have both the original work and the French translation before us; the latter is a handsome volume, printed in Paris on good paper, in excellent type, and the illustrations are clearly and well reproduced. The English edition is published by the Indian Government, and all we will say is that in paper, type, and general get-up, it bears the mark of Government production clearly stamped on it. In truth "a prophet is not without honour save in his own country."

THE KENNEL ENCYCLOPÆDIA. Edited by J. Sydney Turner, M.R.C.S., F.L.S., F.Z.S., &c. (Chairman of the Kennel Club), assisted by Vale Nicolas. Published by the Encyclopædic Press, 22, Bank Street, Sheffield. Fully illustrated. Price, each part of 111 pages, 5s.

The well-known name of the Editor is a sufficient guarantee of the excellent quality of this much-needed work of reference on the dog. It contains articles from the pen of many different writers, each a recognised authority on his or her particular subject, articles describing all the known breeds of dogs; notes on general subjects of the utmost importance to breeders, such as feeding, housing, breeding, &c., &c., while the veterinary notes, obviously written for the instruction of the lay reader, being couched in language as simple as possible, should prove valuable to the amateur as a first aid, by teaching him what to do in cases of disease and when it is advisable to call in a qualified practitioner.

The joint editors give us a glossary of technical "doggy" terms so dear to the heart of the Fancy. The paper and printing leave nothing to be desired, and the illustrations, many of which are photographs, are numerous and good. The work should certainly grace the bookshelves of everyone interested in dogs, and will prove a handy book of reference, being well written in a readable style.

ESSENTIALS OF PHYSIOLOGY FOR VETERINARY STUDENTS. By D. Noël Paton, M.D., B.Sc., F.R.C.P.Ed. Professor of Physiology, University of Glasgow. Second edition. Revised and enlarged. Pp. 464 + xv. Numerous diagrams and illustrations. Published by William Green and Sons, Edinburgh. Price 12s. net.

This excellent work on Physiology is specially adapted for the use of veterinary students and practitioners who wish to keep themselves fresh and up-to-date in such an important subject. The fact that a second edition has been called for so soon shows the appreciation with which the first edition was received, and the author has taken this opportunity of revising it and adding to it. The author is so well known for good work that his name alone is a sufficient guarantee for the

reliability of the material contained in the book, and its lucidity of description. He has also had recent experience as an examiner of veterinary students in physiology, and so knows full well the wants of those gentlemen.

The treatment of the subject commends itself for facility of learning. Protoplasm, the physical basis of life, and its activities, and nature are first dealt with; and then the cells which it composes, and the tissues which they in turn build up. The author then describes the various phases of nutrition of those tissues, and these include the materials necessary for nutrition as supplied by the processes of digestion and respiration, and the carrying of the nutritive elements to the various tissues by the circulatory system by the medium of blood and lymph. The work on digestion includes an excellent chapter on dietetics. Metabolism and heat production are duly considered, and also the methods of excretion of the waste products. Reproduction and development are also briefly considered. A useful appendix containing "some elementary facts of organic chemistry" is included, and assists the student in understanding some of the chemical problems of physiology.

A most interesting and instructive chapter is the one on Hormones or internal secretions, in which the author very lucidly, but all too briefly, describes what is known of the actions of such organs as the suprarenal bodies, pituitary body, the thyroid, &c. In this same chapter he also refers briefly to "toxic action and immunity." The index is a very exhaustive one. We have no hesitation in recommending this book for the use of students and others interested in comparative physiology. The work of the publishers leaves nothing to be desired, the paper, letterpress, illustrations and binding being uniformly good.

Translations and Extracts.

USE OF THE TROCAR FOR BLEEDING.

BY P. CHARITAT.

For more than four years the author has been in the habit of using a trocar to bleed with, and has never had an accident. This plan is in daily use in laboratories, and he thinks that it might well be used in every-day surgical practice.

M. Charitat uses the largest of the trocars supplied with Dieulafoy's aspirator, previously soaked in a strong solution of salt and water. He uses the same to wash the skin with.

The operator stands on the left side of the horse, and presses on the vein with the left thumb, the fingers resting on the lower part of the neck. The trocar is held in the right hand, parallel to the jugular channel, and the skin punctured. The point of the instrument is passed for about half a centimetre through the subcutaneous connective tissue, and is then depressed at an angle of 45°. When it is certain that the point is in contact with the vein it is punctured. With a very little practice this can be always done at the first trial.

Certainly the blood flows slower than if the opening is made with

a fleam or lancet, and, under certain circumstances, this may be a drawback, otherwise there are many advantages. When the operation is finished there are no marks left, and it is unnecessary to pin up the wound and fasten the animal by the head. There is no fear of phlebitis and its attendant complications, or of wounding the carotid, and even if by mischance this should happen, the results are not serious. The operation can be repeated several times, and permits of the injection of artificial serum.

(*Semaine Vétérinaire.*)

PICA (LICKING DISEASE) IN CALVES.

REMMELE, a veterinary surgeon practising at Weesling, in Bavaria, recommends the following:—

Salt		500 grammes.
Juniper berries.		
Powdered gentian ...	āā	100 to 150 grammes.
Phosphate of lime ...		300 grammes.

One or two tablespoonfuls to be given three times per day in the food.

(*Revue Générale de Médecine Vétérinaire.*)

TWO CASES OF CRAMP OF THE NECK CAUSED BY THE BACILLUS OF NECROSIS.

BY STREIT.

THE patient was a gelding, aged 14. He became dull and depressed, and worked badly; the appetite was completely lost; when moved he did so with difficulty, and staggered about, the fore limbs being straddled apart. The head was raised, and the neck stretched out; the muscles of it, the shoulder and tail, being spasmodically contracted. The eyes were staring, and the conjunctiva injected and œdematous; also the membrane of the nose. The head could not be turned or lowered. The temperature was 37·7° C.

The author bled the patient, but he fell down insensible, the respirations nearly ceased (two per minute), and he was destroyed.

On cutting into the neck about 150 cc. of a greyish-yellow coloured fluid containing clots of fibrin escaped. The muscles of the occipito-atloid joint were necrosed, the bone being worn down, and of a purple colour. The cartilage had disappeared, the capsular ligament was thickened and studded over with hæmorrhagic patches. The dura mater was congested, and covered over with fibrinous deposit, the lateral ventricles being dilated, and containing a clear grey-coloured serum. In the cerebellum there was a soft caseous spot about half a centimetre in diameter.

The bacillus of necrosis was detected in the muscles, the occipito-altoid articulation, on the dura mater, and in the bone tissue, but the caseous spot in the cerebellum and the fluid from the ventricles were sterile.

The second case occurred in a cow, aged 12. She had been the

stable companion of another that had died from septic complaint. The cow fed slowly, the temperature was 40·2° C., the mucous membrane normal in colour. The animal gradually became worse, the head and neck were stretched out, and the muscles of the back were convulsed with spasms. She moved with difficulty. After a time, as recovery seemed improbable, the owner had her destroyed. On *post-mortem* examination a certain amount of orange-coloured serum escaped from the vertebral canal, and both the cord and dura mater were surrounded with fibrinous exudate. The periosteum inside the canal at the first and second vertebræ was thickened and brown in colour. The occipito-altoid articulation contained a pink-coloured fluid, in which there were flakes of fibrin, the bones were eroded, and the surrounding muscles of a greyish-yellow colour, and studded over with hæmorrhagic patches; the brain and spinal cord were normal.

On examination, Guillebeau's bacillus of necrosis was discovered, but the origin of the infection is not known.

(*Berliner Tierärztliche Wochenschrift.*)

ASCITES IN THE DOG.

BY SENDRAIL AND CUILLE (TOULOUSE).

ALTHOUGH comparatively rare in most of the domestic animals, ascites is common enough in the dog. The authors recognise three distinct varieties.

(1) *Organic Ascites.*—This is only one symptom of a number of diseases which have a common origin, although at first sight they appear to have no connection with each other. In some the dropsy is caused by mechanical interference with the abdominal circulation, in others by inflammation of the serous membrane, and certain others by giving rise to osmotic action.

When from any cause the venous circulation is interfered with, effusion of serum takes place and ascites is set up. Nearly all the abdominal veins are in relationship with the portal system, and a tumour in the liver may press on the main trunk. In some cases the primary lesion is situated in the liver itself, *i.e.*, biliary infection, blood-poisoning, cysts, tumours, &c., in others it is secondary, the focus being valvular disease of the heart, pericarditis, myocarditis, &c. Yet again the heart may be only the second stage of the disease, being over-fatigued from some chronic pulmonary complaint, chronic nephritis, valvular insufficiency, &c. Derangement of the circulation, however, alone is not in every case sufficient to cause ascites, as the portal vein can be ligatured without it appearing. Inflammation of the peritoneum has to be considered as a factor. Setting aside tubercular peritonitis, it is nearly always secondary, the secretion from the inflamed membrane being increased, while its powers of absorption are diminished. In some cases, however, the portal circulation is perfect, and there is little or no peritonitis to be seen; and then another cause has to be considered. As is well known, all the fluids of the body, both normal and pathological, as well as the protoplasm, contain a certain amount of mineral salts, and on account of their being in different proportions the process of osmosis takes place.

If, however, the amount of chlorides that should have been excreted is interfered with, such as by a diseased kidney, then the amount taken in the food will cause too large a quantity to be present in the system. This is detrimental to the life of the cell and causes an accumulation of fluid in the tissues. Retention of chlorides not only takes place in kidney disease but in heart affections also, and to them the dog is much exposed, as well as those of the liver and lungs, all of which cause ascites.

(2) *Bacillary Ascites.*—Tuberculosis, by causing inflammation of the peritoneum, will give rise to ascites. Generally the primary lesion is to be found connected with the liver, heart, lungs, or kidney, and ascites is produced in the way that has been before described.

(3) *Parasitic Ascites.*—The authors have seen eight cases. The fluid that is drawn off is clear and limpid, and externally there is nothing to indicate what its nature is. The parasites are seen in the form of small vesicles, varying from the size of a pin's head to that of a pea. The walls are thin and transparent, and they are endowed with powers of motion. They somewhat resemble echinococci, but the wall of the sac is always simple, never lamellated, and they are mobile, while the echinococci are not.

The authors consider that these parasites are a larval form of the *Mesocestoides lineatus*, a tape-worm which inhabits the intestine of the dog.

(*Revue Vétérinaire.*)

THE PRACTICAL VALUE OF NEUROTOMY.

BY NOVOTNY.

THE author gives his experience of a large number of cases of neurotomy that he has operated on under various conditions.

Six cases were high double neurotomies, both anterior and posterior, for chronic lameness following punctured wounds in the feet. In all six cases the bone had been injured and the hoof deformed. They all did well. Three other, for side bone, high double neurotomies were performed, with good results.

Seven cases of navicular disease, all of which had been lame for over two years, were rendered sound. One animal was operated on seven years ago, and is still working.

Forty-one cases of ringbone were operated on; of these, nine were ladies' hacks, eight officers' chargers, nine troop horses, thirteen light and two heavy draught horses. Ten of them showed no trace of treatment, the remainder had been previously fired. Nineteen of these animals are still at work, and to the author's personal knowledge one that was operated on eight years ago is still carrying an officer in the garrison at Trieste. One of the nine troop horses developed anchylosis of the fetlock joint two months after the operation, and was useless. Of the draught horses the operation was successful in eleven cases, a failure in three.

Tibial neurotomy, both anterior and posterior, for spavin is not so successful. Fifty-nine cases of this nature came under the author's

notice, eighteen had been fired superficially, four deeply. Three had been lame for less than a year, but most for two or three. In four cases there was no improvement, in thirty the operation was completely successful, in twenty only partly so, the animals going lame after being put to work. In five there were complications following, four of laminitis and one of fracture. The author thinks that tibial neurotomy should only be used as a last resource in cases of spavin lameness. He has had no experience of medium or ischiatic neurotomy, but from what he has gathered from others it would appear that these two operations are even less successful than the tibial in case of spavin.

(*Oesterreichische Monatsschrift für Tierheilkunde.*)

SHEDDING OF THE HOOF AFTER NEUROTOMY.

BY MAGIN.

Nocard attributes accidents after neurotomy, such as shedding of the hoof, to faulty asepsis, but in this opinion the author differs, and thinks they are always caused by mistakes in shoeing, sometimes of such a trifling nature as to be overlooked in the first instance. In support of this theory he quotes the following case:—

High double neurectomy had been successfully performed on an animal that had been very lame on the near fore. The patient went sound after the operation but there was an abnormal degree of extension in the limb, which was attributed to elongation of the flexor tendon. Some months afterwards, at the forge, the smith removed too much horn and the animal contracted a corn in the inner heel. This was attended to, and in forty-eight hours no trace of the injury was left. Five days afterwards the horse was going slightly short, and there was swelling of the pastern and fetlock joint. The next day all these symptoms were more marked, and very shortly afterwards the hoof was shed and the animal had to be destroyed.

(*Bulletin de la Société Centrale de Médecine Vétérinaire.*)

A PECULIAR FORM OF DERMATITIS ON THE FACE OF THE HORSE.

BY ABLAIRE.

At a meeting of the Paris Central Veterinary Medical Society, on November 16, 1905 (*Revue Générale de Médecine Vétérinaire*, vol. viii., 1906), the author read a paper on a peculiar form of dermatitis that affected the face of the horse. In the ensuing discussion, Professor Cadiot remarked that this affection had already been described by Lessona and Dieudonne, who attributed it to parasitic eczema, caused by the larvæ of the œstrides. These, according to M. Raillet, were those of the *Gastrophilus Intestinalis* and *Nasalis*.

In a fresh communication M. Ablaire contradicts the theory; he points out that no one has ever found the larvæ on the face, and

that although the gad fly is well known all over France, it is only in certain places that this peculiar form of dermatitis is seen, more particularly in the valley of the Meuse.

(*Bulletin de la Société Centrale de Médecine Vétérinaire.*)

RESUSCITATION OF NEW-BORN CALVES.

BY VILLEMIN.

THE author points out that although new-born calves are often, to all appearances, dead, in very many cases they can be resuscitated by stimulating the central reflexes.

Dr. Laborde's method of rhythmical traction on the tongue, which has been so successfuly used in restoring apparently drowned persons, is fatiguing to the operator. Violent heating creates an unfavourable impression. Rubbing the nose with a brush or wisp of straw is a good plan and can be carried out without any assistance. For some years past the author has, with great success, passed a straw up the nostril and kept on turning it round. The young animal makes a short, quick inspiration, and expiration is brought about by slightly compressing the chest. After these movements have been repeated once or twice, in the majority of cases normal respiration will be set up.

(*Journal de Médecine Vétérinaire et de Zootechnie.*)

THERAPEUTIC ACTION OF OIL OF JUNIPER.

BY PROFESSOR GMEINER.

THE juniper is found in all temperate climates, and has been used in medicine from the remotest times by the Egyptians, Greeks, and Romans, for many purposes. The active principal, juniperin, was isolated by Steer, who recognised a difference in the products of ripe and green fruits. The earliest experiments were made by Julius Simon in 1844, who found it was a poison that was absorbed by the intestine and eliminated by the lungs and kidneys. There was no alteration in the digestive apparatus; and with 15 to 30 grammes given by the mouth rabbits were killed in about twenty hours. Vogel, Müller, and Jaksch considered jumper oil an excellent diuretic, equal to turpentine. The author made a series of experiments, both on himself and animals, and found that a dose of 1½ grammes caused diuresis that lasted for several hours, and increased the quantity of urine by more than a half. With a horse that ate a kilogramme of the leaves there were no effects. With 8 grammes of juniper oil there was slight diuresis; there was no albumen in the urine; with 9 grammes the quantity was doubled, and between the sixth and eighth hour there was diuresis.

The following are his conclusions: Juniper leaves have no action, and the dose that is recommended in works on therapeutics would have to be increased forty- or fifty-fold. The active principle is an ethereal oil known as juniperin, a combination of an acid and sugar, the dose of which for the horse is about 9 grammes, diluted with water. In excessive doses it gives rise to hæmorrhagic gastro-enteritis, nephritis and cystitis, with hæmaturia and albuminuria.

(*Deutsche Tierärztliche Wochenschrift.*)

Correspondence.

MR. DOLLAR'S CIRCULAR.

To the Editors of the VETERINARY JOURNAL.

SIRS,—I herewith enclose a copy of the questions asked by Mr. Dollar concerning the proposed new Bill, together with the answers I have sent him. I trust many members of the Royal College of Veterinary Surgeons will answer him in a similar manner, in order to show that we have confidence in the Council we have elected to look after our interests. *Some* members of that Council give freely and ungrudgingly the best of their time, thought, and attention to the general welfare of the profession, to say nothing of the out-of-pocket expenses they incur in doing so. It is impossible to imagine that they have suddenly developed a desire to injure the profession, and I am sure that veterinary surgeons as a body will not believe it.

Yours faithfully,

(*Signed*) T. S. PRICE, M.R.C.V.S.

London,
February 29, 1908.

[ENCLOSURE.]

Do you approve:—

(1) Of the Bill as it stands? Yes.

(2) Of members being struck off the Rolls for failing to pay a yearly Registration Fee? This is the only way of making it compulsory and beneficial.

(3) Of a yearly Registration Fee being imposed on all existing members of the R.C.V.S.? Most certainly, as it will benefit the whole profession.

(4) Of a yearly Registration Fee being imposed only on new members joining the profession? No; on *all* members.

(5) Of the Registration Committee acting as prosecutor and judge when dealing with members of the R.C.V.S.? They are elected by the profession, and are the right people to do it.

30, Brixton Hill, S.W. (*Signed*) T. S. PRICE, M.R.C.V.S.
February 29, 1908.

Books and Periodicals, &c., Received.

Board of Agriculture; Department of Agriculture and Technical Instruction for Ireland; Royal Dick College Magazine; Bureau of Animal Industry, United States Department of Agriculture; Agricultural Journal (Transvaal); Agricultural Journal (Cape of Good Hope); The Tropical Agriculturist (Ceylon); Journal of the Royal Army Medical Corps; The Production and Handling of Clean Milk, by Kenelm Winslow (Baillière, Tindall and Cox, 10s. 6d. net.).

NOTE.—All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C. Telephone, 4646 Gerrard. Telegrams, "Baillière, London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements), should be addressed to the Editor.

Manuscript—preferably type-written—should be on one side only of paper, marked with full name of author.

Illustrations for reproduction should be in good black or dark brown on white paper or card.

Advertisements and all business matters relating to the JOURNAL should be addressed to the publishers, Messrs. Baillière, Tindall and Cox.

MR. J. A. GILRUTH, M.R.C.V.S., F.R.S.E.

Chief Veterinarian to the Department of Agriculture, and Pathologist to the Public Health Department of the New Zealand Government.